

Chapter 4: Maintenance activities

This chapter describes procedures for the removal and installation of all field-replaceable Meridian IVR Application Processor components.

Preparing for field maintenance

This section describes the required tools and equipment you need to perform maintenance procedures.

Field maintenance should always be performed by fully qualified, trained personnel.

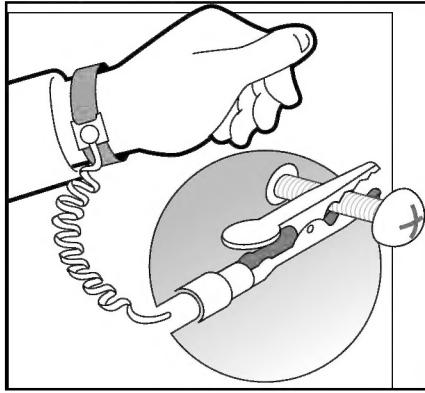
Antistatic wrist strap

Electrostatic Discharge (ESD) can seriously damage component parts such as disk drives and add-in boards. We recommend that the procedures described in this chapter be performed at an ESD workstation.

If an ESD workstation is not available, you can provide some ESD protection by wearing an antistatic wrist strap. Ground the ESD wrist strap by attaching it to any unpainted surface on your system chassis as shown in [Figure 4-1](#).

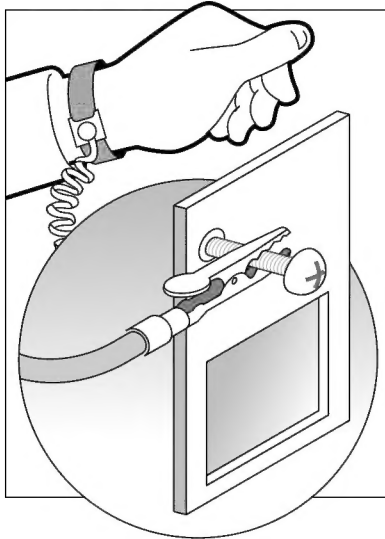
Note: The Application Processor should be plugged in to the AC power source to ensure a proper ground.

Figure 4-1
ESD wrist strap



Your wrist strap should be tested before each use as shown in **Figure 4-2**.

Figure 4-2
Testing ESD wrist strap



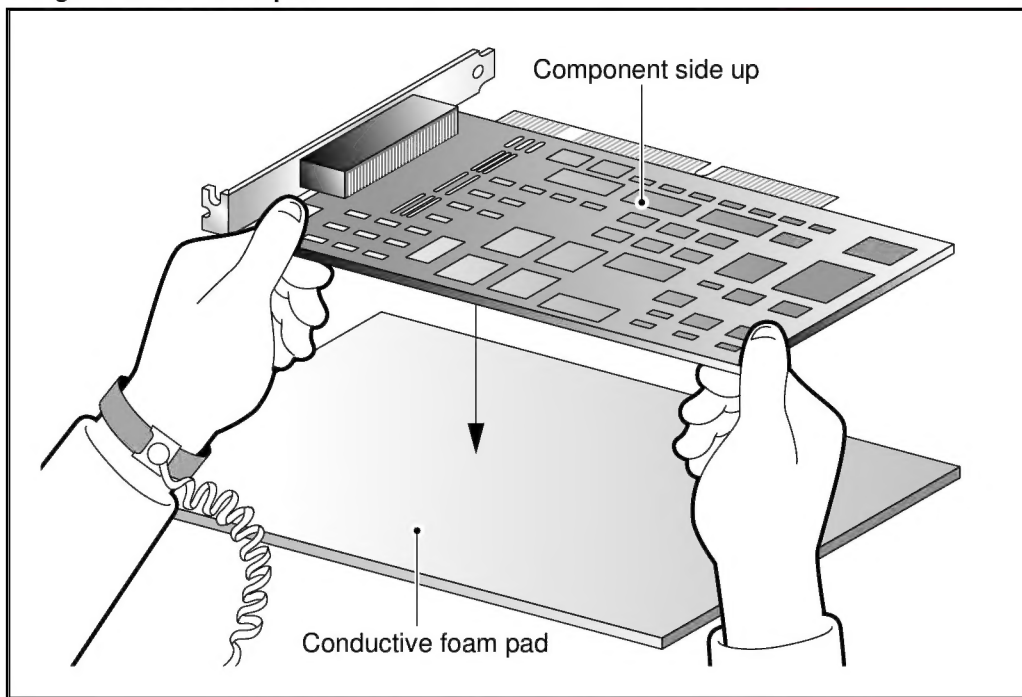
Conductive foam pad

Add-in boards are extremely sensitive to ESD. After removing a board from its protective wrapper or from the system, place it component-side up on a conductive foam pad as shown in [Figure 4-3](#).

Do not place the board on its wrapper.

Do not slide the board over any surface.

Figure 4-3
Using conductive foam pad

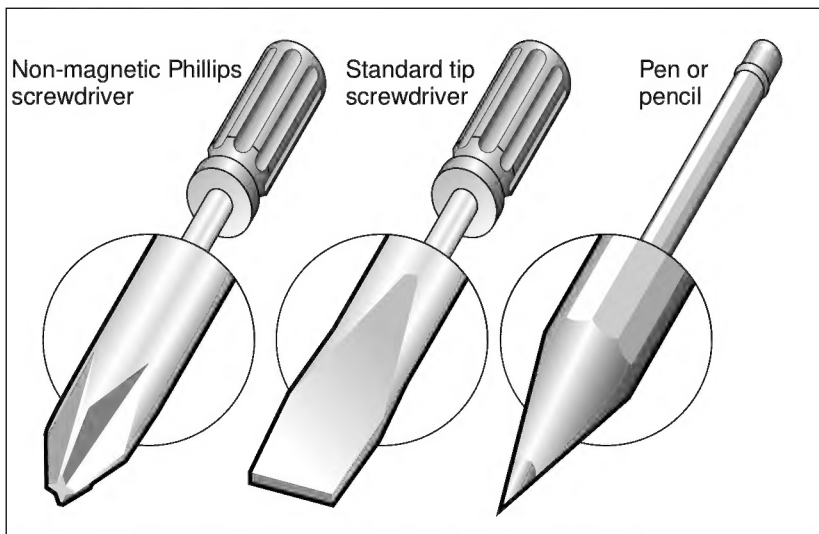


Required tools

You will need the following tools to perform the maintenance activities described in this chapter:

- Non-magnetic Phillips screwdriver with a #2 bit
- Standard (slot-head) screwdriver (1/4"–1/2")
- IC removal tool
- ESD wrist strap
- pen or pencil

Figure 4-4
Required tools



Application processor power-down

If you need to install, reinstall, or replace hardware components, you must power down the application processor.

Procedure 4-1

Powering down the application processor

- 1 Shut down the system by logging in as root and issuing the following command:

shutdown

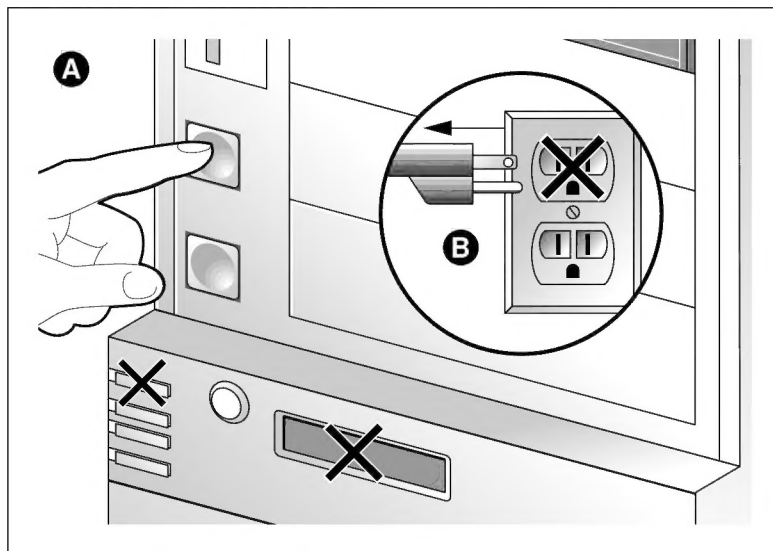
After several system messages, the system is ready to power down.

- 2 Turn off all peripheral devices connected to the application processor.
- 3 Open the front panel door.
- 4 Turn the server off with the DC push-button switch on the front panel of the server as shown in (A) of Figure 4-5.

The green power light and LCD indicator panel will power out.

- 5 Unplug the AC power cord from the wall plug as shown in (B) of Figure 4-5.

Figure 4-5
Powering down the server



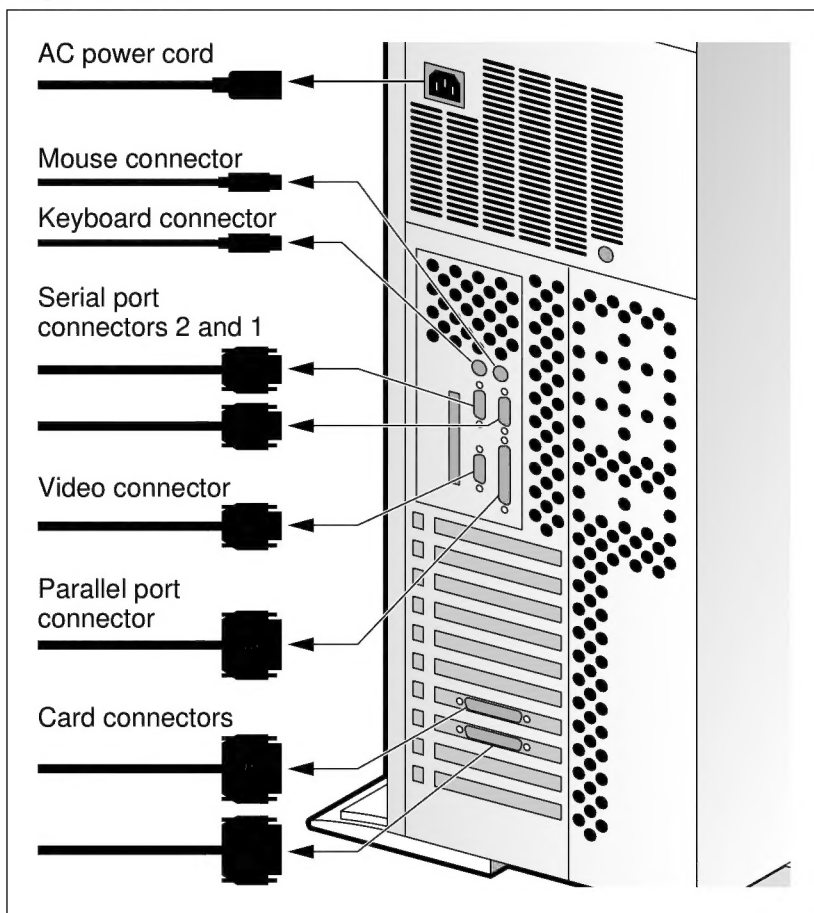
Accessing the server chassis

This section outlines the steps necessary for accessing the server chassis.

Disconnecting peripheral cables

Label and disconnect all peripheral cables attached to the I/O panel on the back of the server as shown in **Figure 4-6**.

Figure 4-6
Peripheral cables



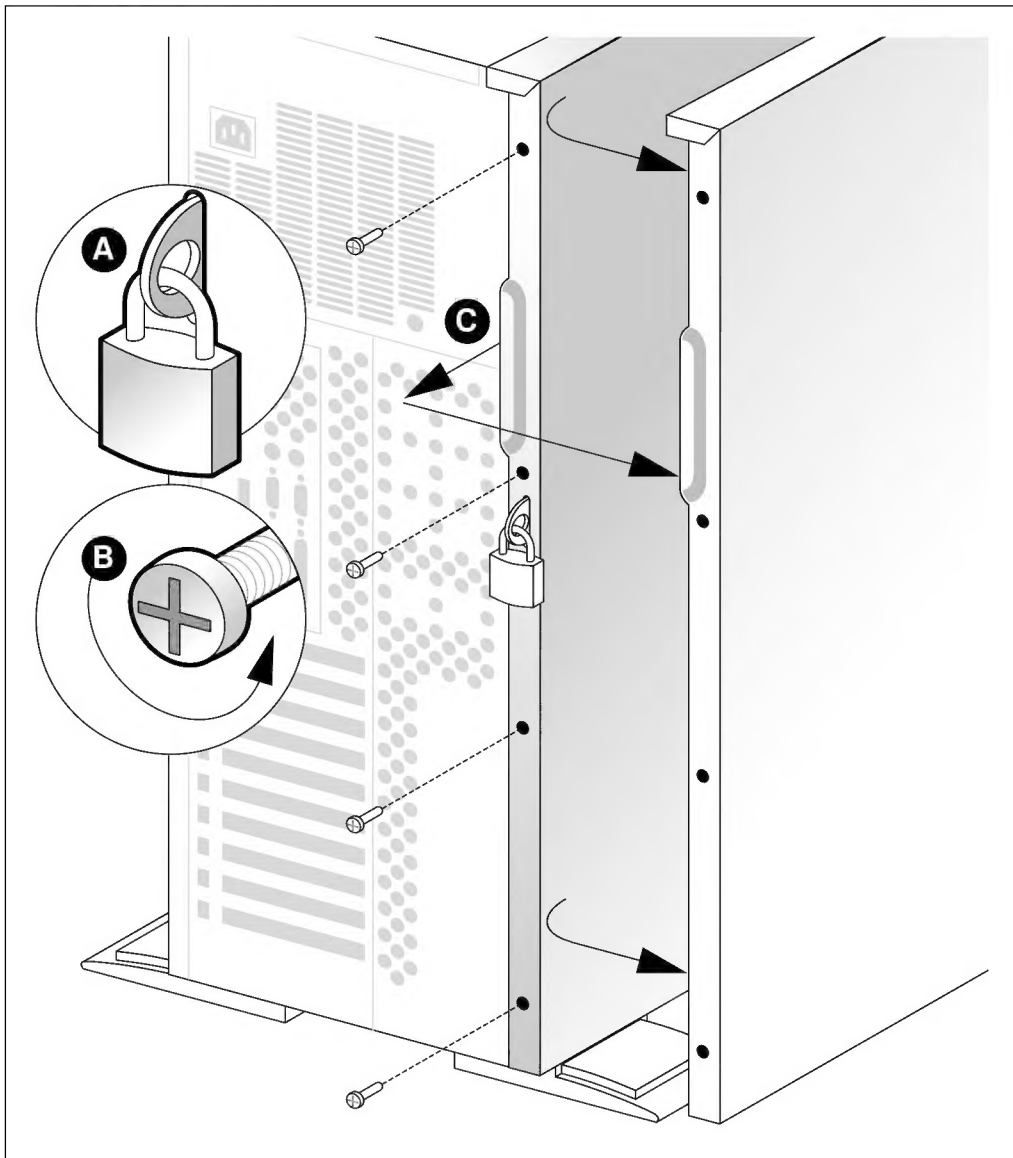
Side cover removal

To remove the side cover of the server, follow the procedure below.

Procedure 4-2**Removing the side cover**

- 1** Remove the padlock device from the back of the server as shown in (A) of **Figure 4-7**.
- 2** Remove the four screws from the back of the side cover as shown in (B) of **Figure 4-7**.
- 3** Pull the cover backwards slightly as shown in (C) of **Figure 4-7**.

Figure 4-7
Side cover, back view



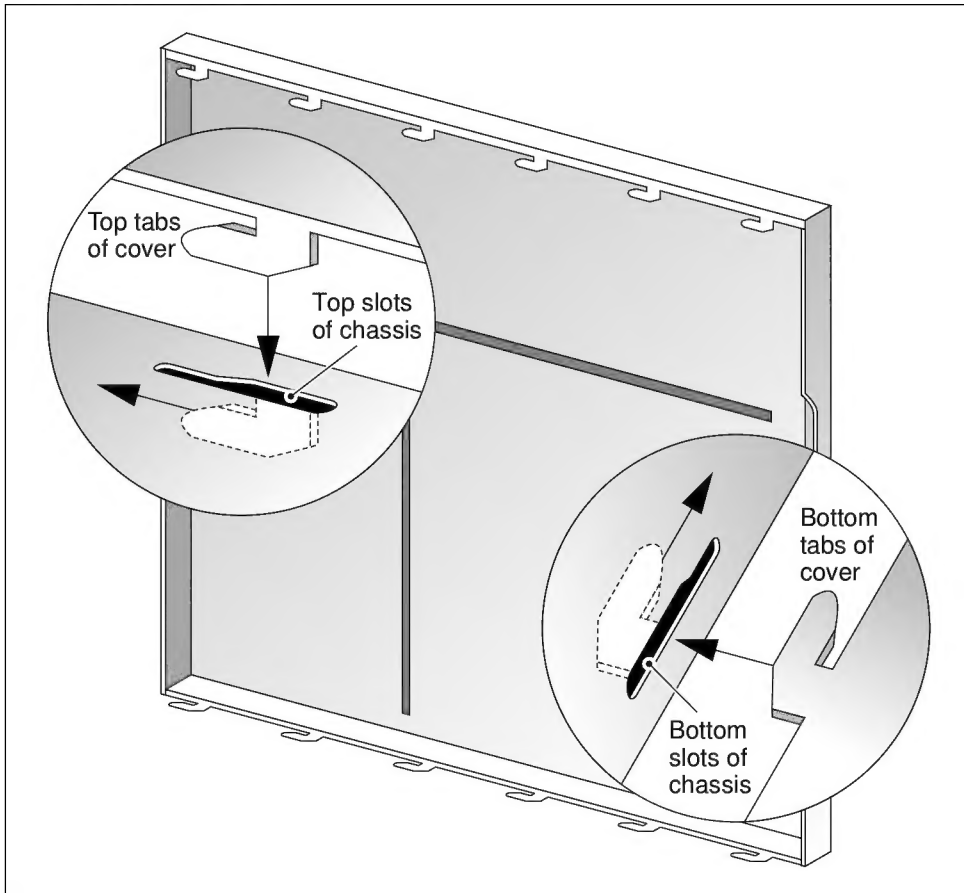
- 4 Pull the bottom cover toward you to disengage the bottom row of tabs from the notches in the chassis.
- 5 Lift the cover up to disengage the top row of tabs from the notches at the top of the chassis. The tabs are detailed in **Figure 4-8**.



DANGER!
Risk of personal injury

Touching the sharp metal edges of the cover may cause personal injury.

Figure 4-8
Side cover, tabs detail



Side cover replacement

To replace the side cover of the chassis, follow the procedure below.

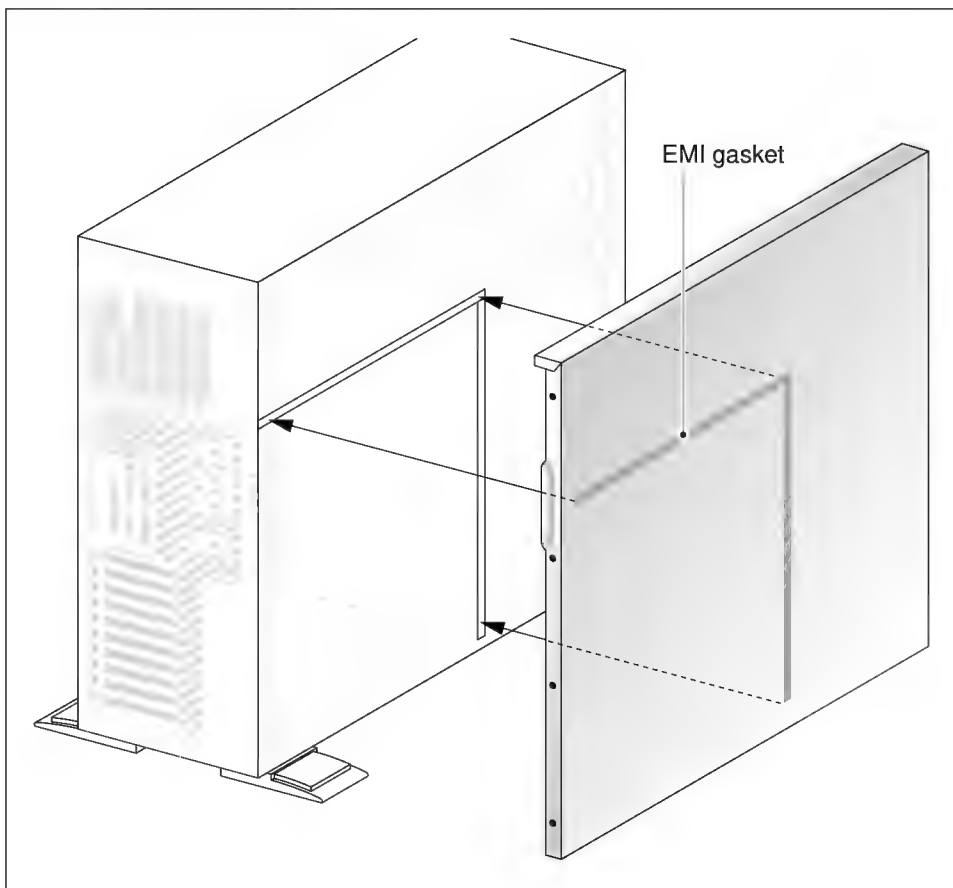
Before replacing the side cover, ensure that there are no tools or loose parts inside the chassis.

Procedure 4-3 Replacing the side cover

- 1 Position the side cover over the chassis so that the top and bottom rows of tabs align with the slots in the chassis.
- 2 Slide the cover toward the front of the server so that the tabs firmly engage in the chassis notches.

Note: Be careful not to damage the electromagnetic interference (EMI) gaskets mounted on the side cover as shown in [Figure 4-9](#). Replace all damaged gaskets.

Figure 4-9
Side cover, EMI gaskets detail



- 3 Attach the side cover to the chassis, tightening the screws firmly.
- 4 Replace the padlock at the back panel.
- 5 Connect all external cables and the power cord to the back panel.

Front panel and door assembly removal

The front panel and door assembly consists of a base panel with four removable filler panels and a door. A combination of metal clips and tabs on the assembly secure it to the front of the chassis. If you are installing peripheral devices in the external bays, you must remove the filler panels.

Before removing the front door assembly, all peripheral devices must be disconnected from the server, and the side panel must be removed.

To remove the front door assembly, follow the procedure below.

Procedure 4-4

Removing the front panel and door assembly

- 1 Open both plastic front doors of the server.
- 2 Grasp the two metal clips on the left side of the front panel and door assembly. Gently lift them up until they detach from the chassis.
- 3 Pull the left side of the assembly away from the chassis at a 15-degree angle.
- 4 Slide the assembly to the right to disengage the metal tabs from the right side of the chassis.

Front panel and door assembly replacement

To replace the front panel and door assembly, follow the procedure below.

Procedure 4-5

Replacing the front panel and door assembly

- 1 Position the assembly in front of the server so that the metal tabs on the right side of the assembly align with the slots in the chassis wall.
- 2 Slide the assembly to the left to engage the metal tabs in the slots.
- 3 Push the assembly toward the chassis until the two metal clips on the right side snap in place on the chassis.
- 4 Close the plastic front doors of the server.

Removing and installing the diskette drive

The server has a 3.5-inch diskette drive installed in the external 3.5-inch peripheral bay. The drive is attached to the server chassis by a carrier assembly. This section outlines the procedures for removing and installing the diskette drive and carrier assembly.

Diskette drive removal

Before removing the diskette drive, you must power down the server, remove the side panel, and remove the front panel and door assembly.

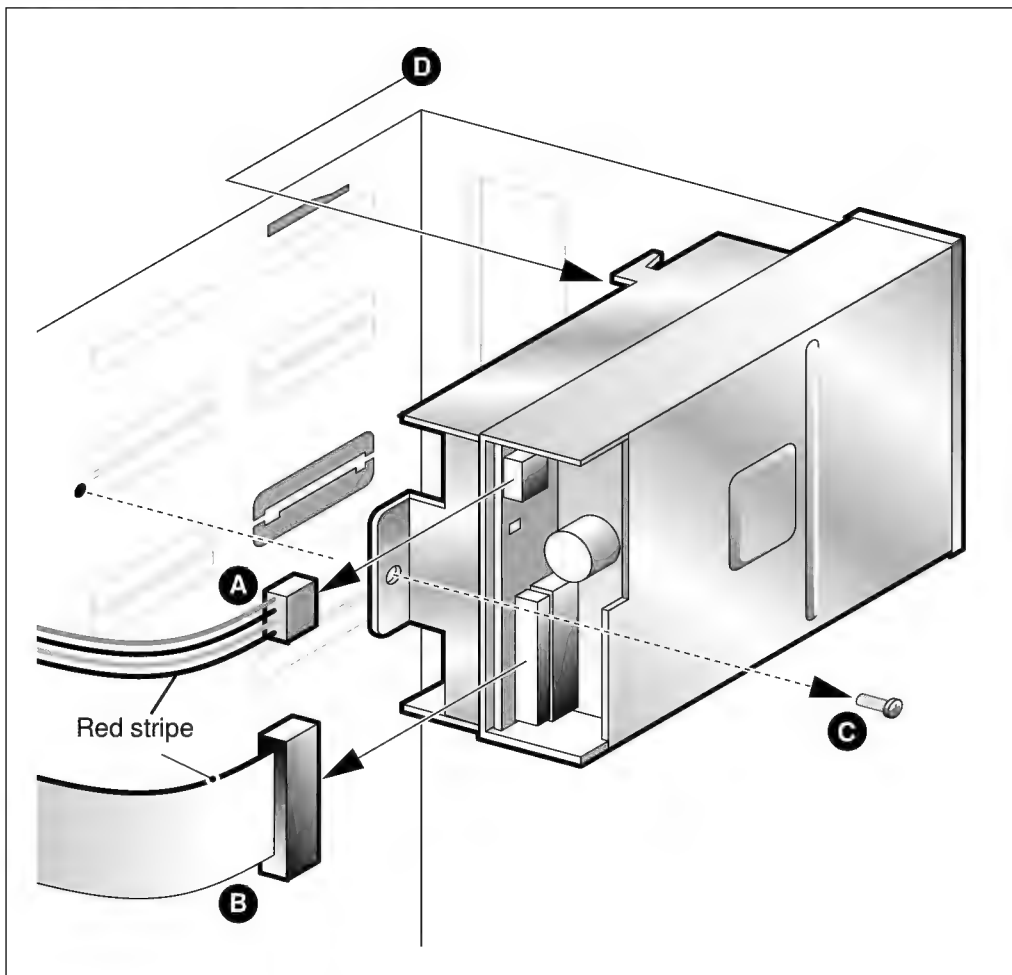
To remove the diskette drive, follow the procedure below.

Procedure 4-6

Removing the diskette drive

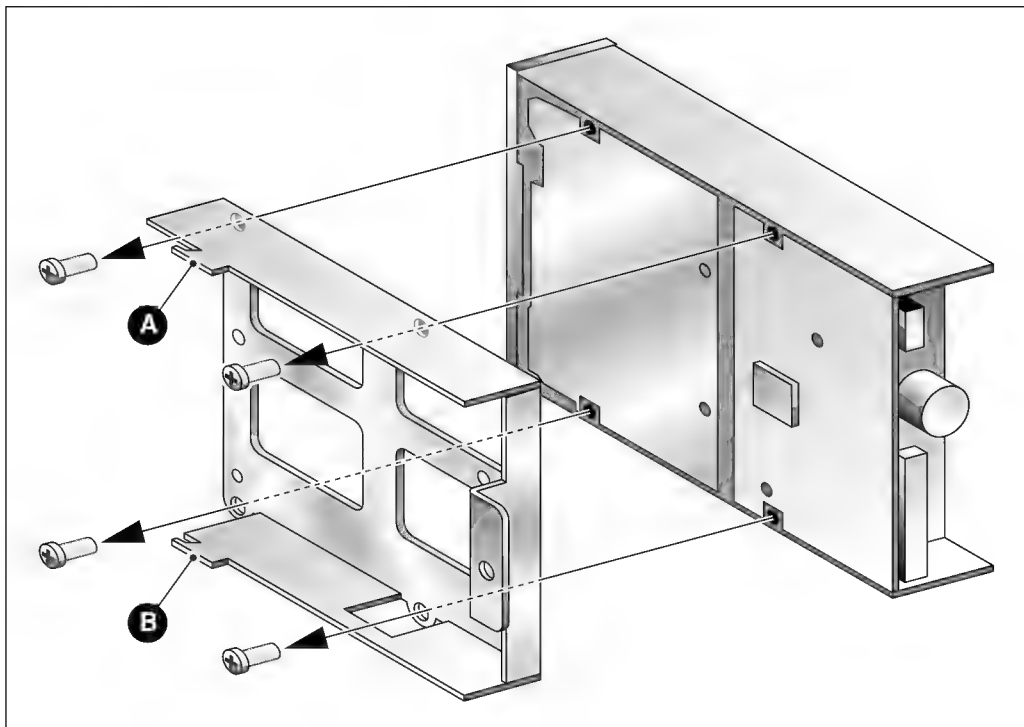
- 1 Disconnect the power cable and signal cable from the back of the diskette drive as shown in (A) and (B) of [Figure 4-10](#).
- 2 Remove the screw securing the drive and carrier assembly to the chassis as shown in (C) of [Figure 4-10](#).
- 3 Slide the assembly towards the back of the server to disengage the tabs from the slots on the chassis wall as shown in (D) of [Figure 4-10](#).

Figure 4-10
Disconnecting the diskette drive



- 4 Remove the drive and assembly from the chassis, and place it component-side up on an antistatic surface.
- 5 Remove the four screws holding the carrier assembly to the drive as shown in [Figure 4-11](#).

Figure 4-11
Remove diskette carrier assembly



- 6 Place the drive in an antistatic protective wrapper.

Diskette drive installation

To install the diskette drive and carrier assembly, follow the procedure below.

Procedure 4-7 **Installing a diskette drive**

- 1 Remove the diskette drive from its protective wrapper, and place it component-side up on an antistatic surface.
- 2 Record the drive model and serial numbers in your equipment log.
- 3 Set any jumpers and switches according to the drive manufacturer's specifications.
- 4 Place the drive carrier on the component-side of the drive aligning the four mounting holes.

- 5 Attach the carrier assembly to the drive with four screws.
- 6 Position the drive and carrier assembly over the slots in the chassis wall.
- 7 Slide the assembly towards the front of the server to attach tabs (A) and (B) (as shown in [Figure 4-11](#)) in the slots in the chassis wall.
- 8 Use a screw to secure the drive and carrier assembly to the chassis wall.
- 9 Connect the signal cable and power cable to the diskette drive. Note the position of the red wire on the power cable.

Removing and installing a mass storage device

The server includes four external 5.25-inch half-height bays that provide space for tape backup, CD-ROM, and other removable media devices. The following sections outline how to remove and install a removable media device in the half-height drive bays.

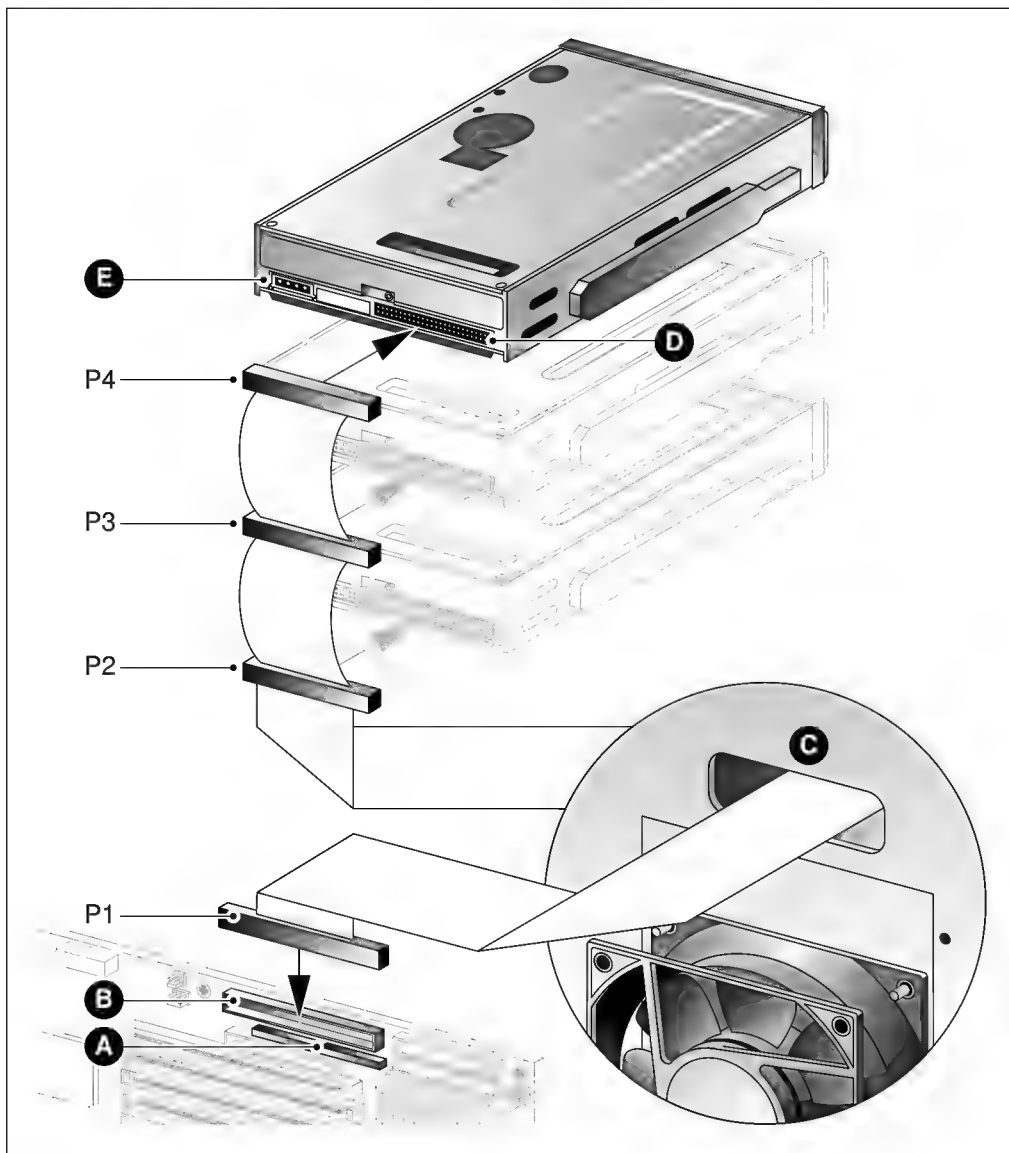
Installing the SCSI cable

Before installing a removable media device, you must install the narrow SCSI cable.

Procedure 4-8 SCSI cable installation

- 1 Remove the SCSI terminating resistor packs from the system board.
- 2 Insert the P1 connector end of the SCSI 50-conductor signal cable through the slot in the chassis above the fan as shown in (C) of [Figure 4-12](#).
- 3 Attach P1 to the SCSI connector on the system board as shown in (B) of [Figure 4-12](#). Align the red stripe on the cable toward the I/O panel. The connector is keyed and can be inserted one way only.
- 4 Install the mass storage device as detailed in [Figure 4-13](#).
- 5 Plug the P4 cable connector into the top SCSI device in the 5.25-inch bays as shown in (D) of [Figure 4-12](#).

Figure 4-12
SCSI cable installation



Note: If the device which you are installing is terminated with resistor packs, do not remove the packs. If the device is terminated with a SCSI IC active terminator, do not disable the SCSI terminator.

Mass storage device installation

The following procedure details how to install a mass storage device in the server.



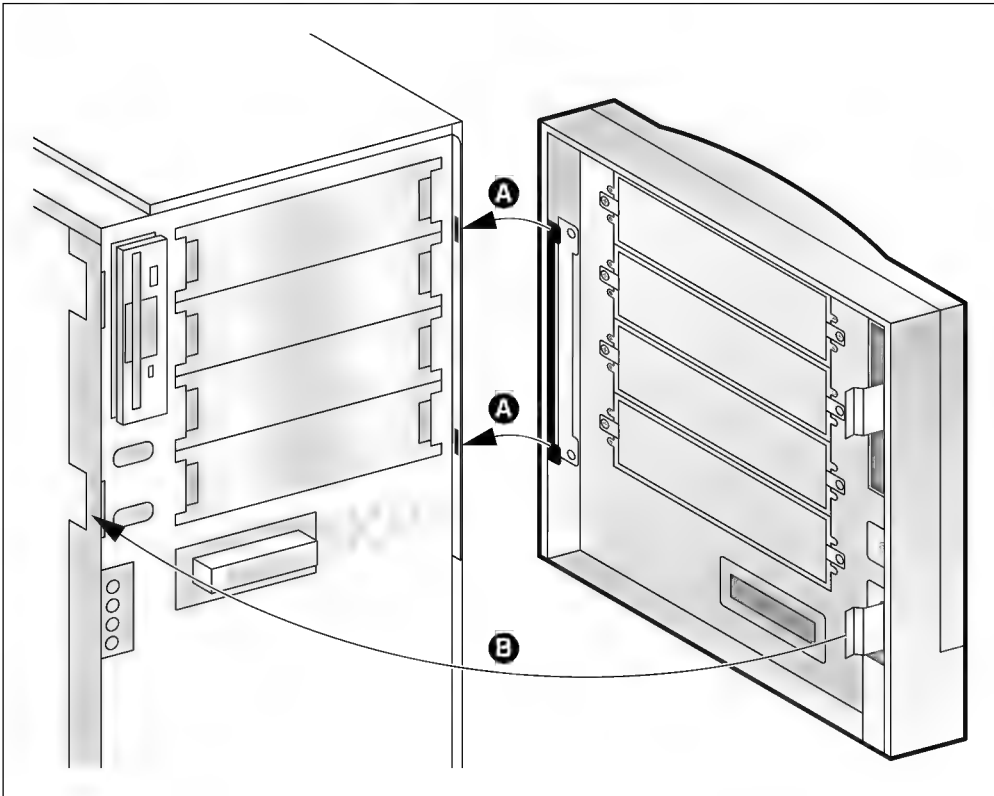
CAUTION! **Risk of data loss**

Do not mount a hard disk drive in a 5.25-inch external bay as the drive will generate electromagnetic interference.

Procedure 4-9
Installing a mass storage device

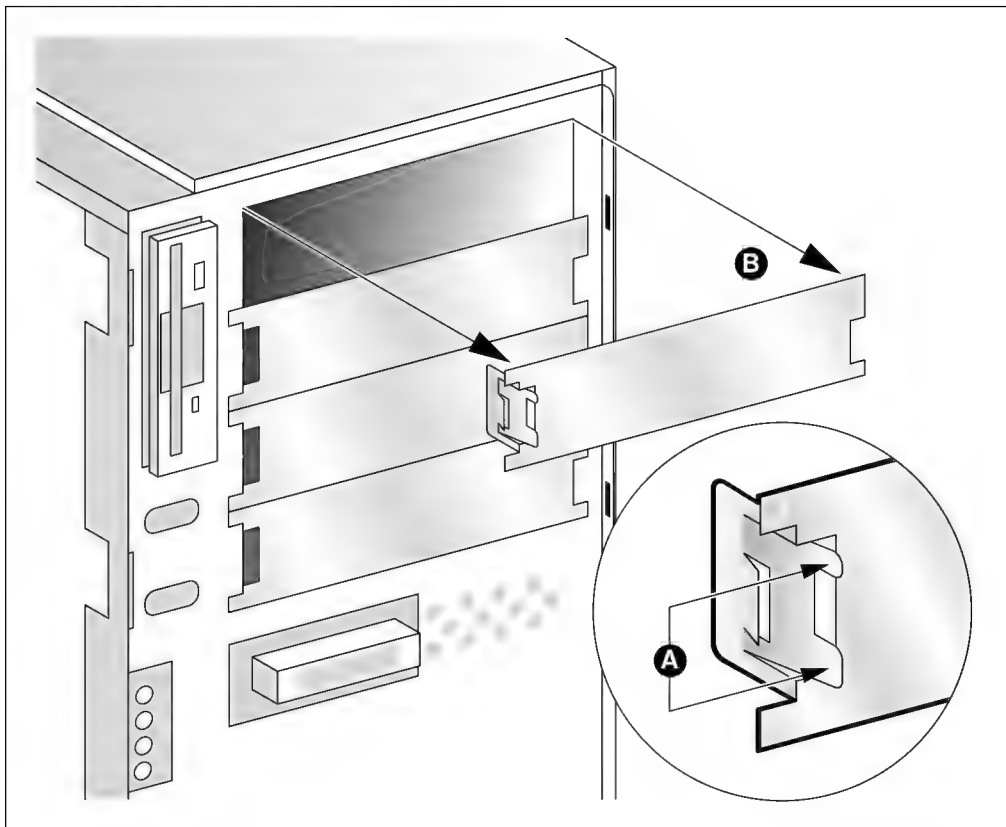
- 1 Completely remove the upper front door of the application processor by unclipping the door as in (B) of the following figure.

Figure 4-13
Installing the mass storage device



- 2 Push the tab on the left side of the metal shield to the right to disengage it from the chassis.

Figure 4-14
Removing the metal shield



- 3 Remove the device from its protective wrapper and place it on an antistatic surface.
- 4 Record the model and serial number of the device in your equipment log.
- 5 Set the SCSI ID to 2 for the tape drive.
- 6 Ensure that the last narrow SCSI device on the SCSI bus is terminated.
- 7 Attach the plastic snap-in slide rail B to the left side of the device using two screws and a grounding clip as shown in [Figure 4-13](#). The grounding clip should be installed under the screw used at the front of the device.

- 8 Attach rail A to the right side of the device using two screws.
- 9 Position the device so that the plastic slide rails on each side engage in the bay guide rails as shown in [Figure 4-16](#).
- 10 Push the device into the bay until the slide rails lock in place.
- 11 Connect the SCSI signal cable and power cable to the back of the device. The connectors are keyed and can be inserted one way only.
- 12 Replace the side cover and front door assembly.

Removing a mass storage device

The following procedure outlines how to remove a mass storage device from the server.

Before removing a mass storage device, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

Procedure 4-10

Mass storage device removal

- 1 Disconnect the power cable and SCSI signal cable from the device.
- 2 Squeeze both plastic rails attached to the device and carefully slide the device forward out of the bay.
- 3 Place the device on an antistatic surface.
- 4 Remove the screws and grounding clips holding the two snap-in rails to the device.
- 5 If you plan to leave the bay empty, install a filler panel and stainless steel EMI shield on the bay.
- 6 Replace the side cover and front door assembly.

Add-in boards

The system base board provides three PCI slots and six EISA bus master slots. These slots accept any EISA expansion board.

These slots are numbered from the bottom, with slot #1 the lowermost EISA slot. Slot #6 shares a chassis I/O expansion slot with PCI slot #1. You can use either the PCI slot or the EISA slot, but not both.

Before installing or removing an add-in board, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

Installing an add-in board

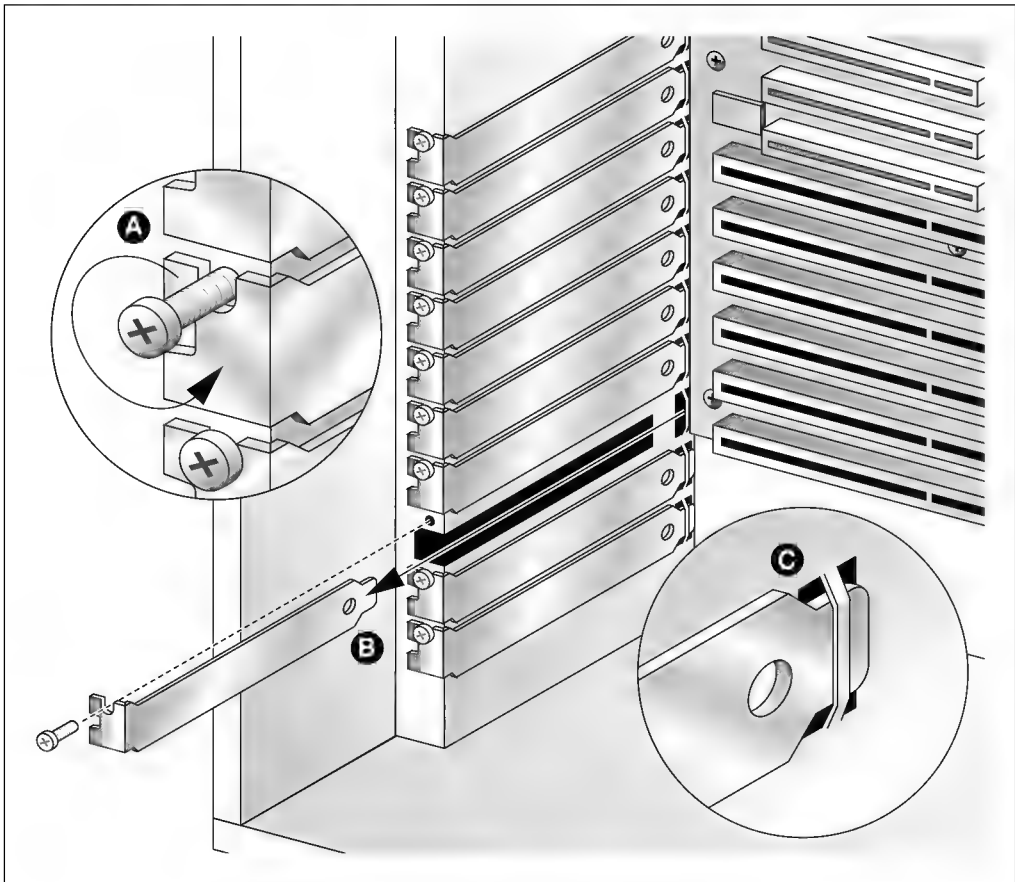
To install an add-in board, follow the procedure below.

Procedure 4-11

Add-in board installation

- 1** Remove the expansion slot screw as shown in (A) in [Figure 4-15](#).
- 2** Remove the expansion slot cover as shown in (B) in [Figure 4-15](#).

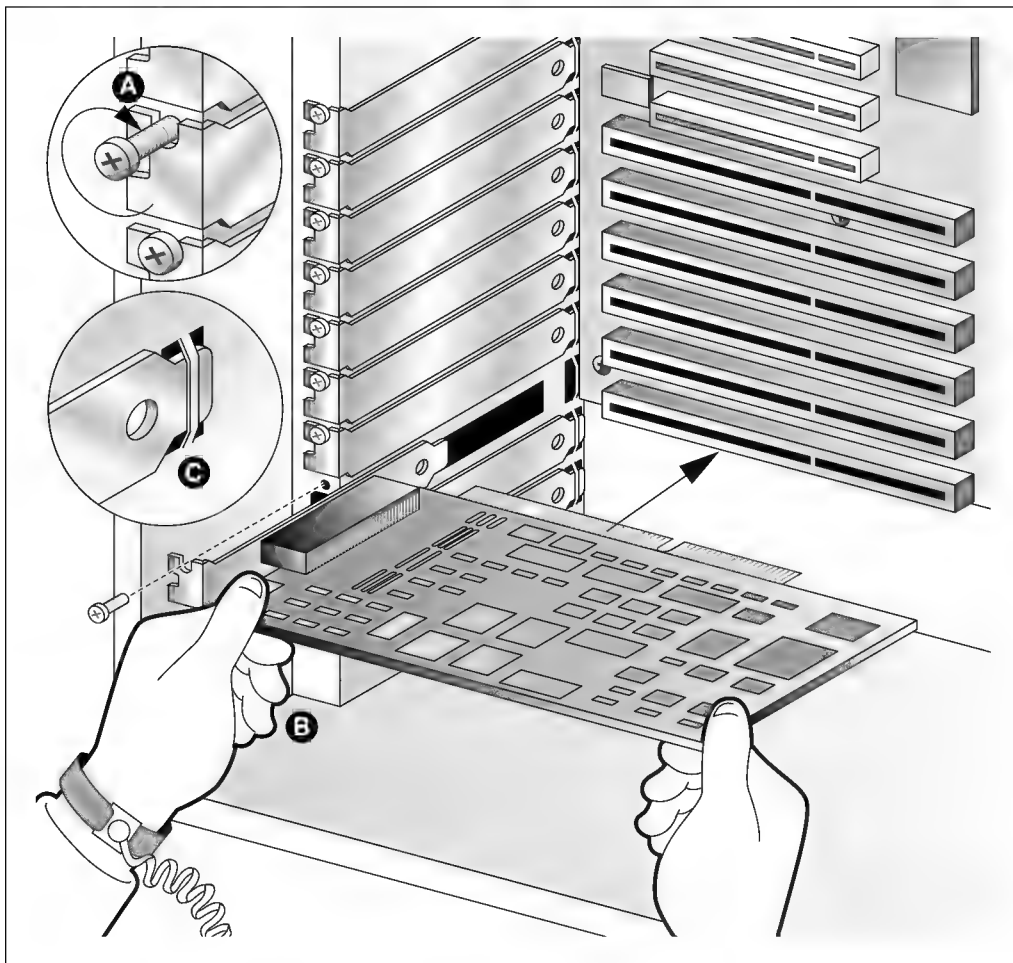
Figure 4-15
Removing the expansion slot cover



- 3 Remove the add-in board from its wrapper and place it component-side up on an antistatic surface.
- 4 Record the board's serial number.

- 5 Set jumpers and switches:
 - For the Arnet SYNC/570 card, see "IBM 3270 SNA card (Arnet SYNC/570)" on page 3-21.
 - For the Ethernet card, see "Ethernet card (ZNYX PCI)" on page 3-23.
 - For the VT100 serial card, see "VT100 serial card (DigiBoard PC/Xe board)" on page 3-26.
 - For the token ring card, see "Token ring card (Madge Smart 16/4 AT Plus)" on page 3-30.
 - For the fax card, see "Fax Card (Dialogic VXF/40E)" on page 3-33.
- 6 Hold the board by its top edges and firmly press it into an expansion slot as shown in (B) of Figure 4-16. Make sure the tapered end of the retaining bracket is aligned to fit into the notch at the end of the expansion slot as shown in (C) of Figure 4-16.
- 7 Attach the retaining bracket to the chassis with the expansion slot screw as shown in Figure 4-16.

Figure 4-16
Add-in board installation



- 8 Replace the side cover.
- 9 Run the System Configuration Utility to configure the system.

Removing an add-in board

To remove an add-in board, follow the procedure below.

Procedure 4-12

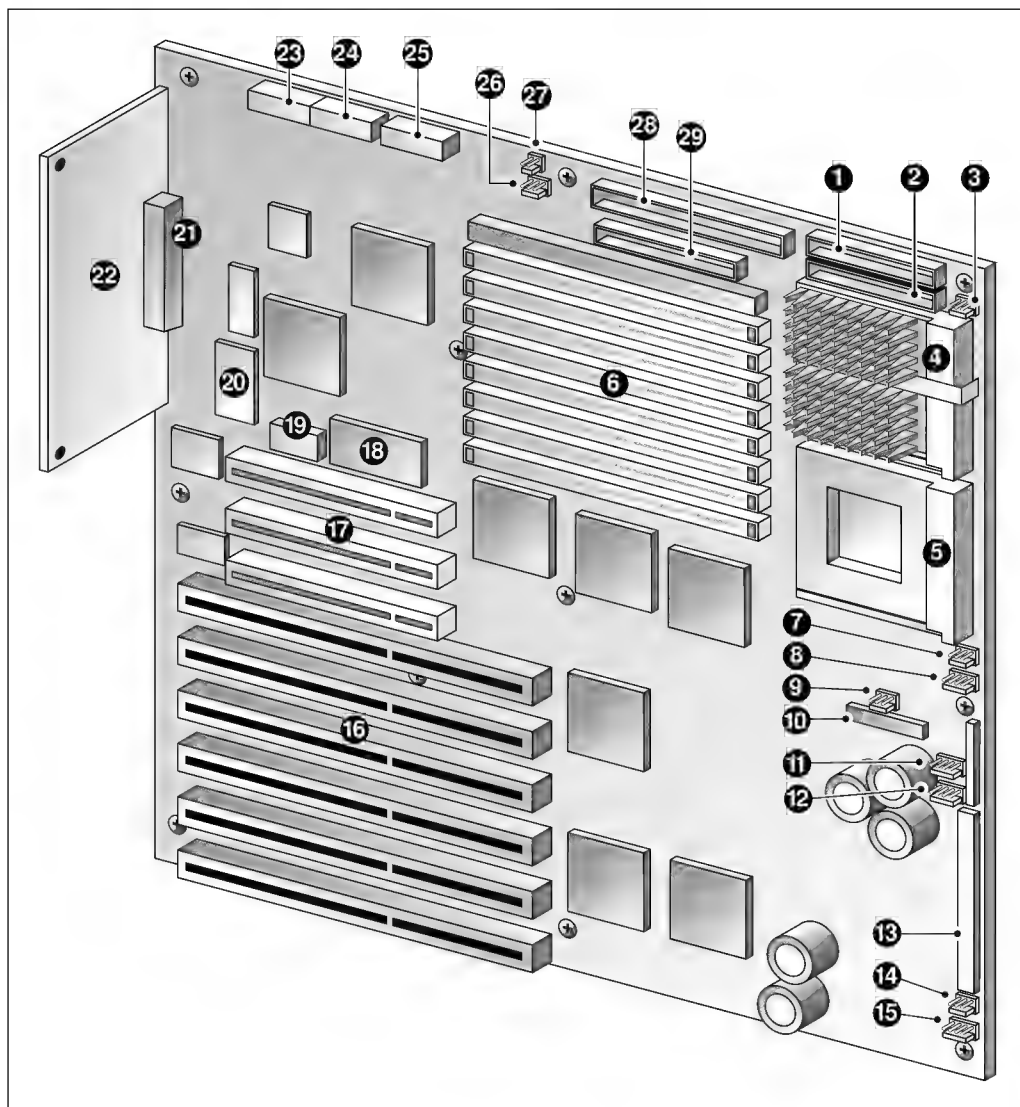
Add-in board removal

- 1** Label and disconnect any cables attached to the board.
- 2** Remove the add-in board retaining screw.
- 3** Hold the board by its upper corners and rock it gently until the edge connectors pull free.
- 4** Store the board in an antistatic wrapper.
- 5** Install an expansion slot cover in the vacant slot.
- 6** Insert the retaining screw in the expansion slot cover.
- 7** Replace the side cover.

System base board and I/O panel

Figure 4-17 illustrates the component parts of the system base board and I/O panel.

Figure 4-17
System base board and I/O panel components



The following table describes the numbered items in [Figure 4-17](#).

Table 4-1
Base board components

Number	Description	Number	Description
1	Front panel connector	16	EISA slots
2	3.5 inch diskette drive connector	17	PCI slots
3	5 volt fan connector	18	Real-time clock
4	Pentium processor in ZIF socket	19	3.3 v PCI connector
5	ZIF socket for second Pentium processor	20	Video DRAM socket
6	SIMM sockets	21	I/O panel connector
7	Fan 1 power connector	22	I/O Board
8	Hard drive LED connector	23	P1 power connector
9	5 volt fan connector	24	P2 power connector
10	Server management interface	25	P3 power connector
11	Chassis switch	26	Power connector
12	Front panel LED connector	27	Power supply enable header
13	Configuration jumper block	28	SCSI cable connector
14	Fan 2 power connector	29	IDE connector
15	Hard drive LED connector		

Removing the system base board and I/O panel assembly

To replace the system base board and I/O panel, follow the procedure below.

Before removing the system base board and I/O panel, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

Procedure 4-13

System base board and I/O panel removal

- 1 Label and disconnect any peripheral cables attached to the I/O panel at the back of the server.
- 2 Label and disconnect all internal cables connected to the add-in boards installed in the expansion slots.
- 3 Remove the add-in boards as described in [Procedure 4-12, Add-in board removal, on page 4-26](#).
- 4 Label and disconnect all internal cables connected to the system base board.
- 5 Unlatch the I/O panel from the chassis.
- 6 Remove the system board retaining screws.
- 7 Slide the system boards and I/O panel assembly toward the front of the server until the I/O connectors clear the rear of the chassis.
- 8 Remove the board and I/O assembly and place them on an antistatic surface.
- 9 If necessary, remove the I/O panel from the system board.

Installing the system board and I/O panel

To install the system board and I/O panel, follow the procedure below.

Procedure 4-14

System base board and I/O panel installation

- 1 Snap the I/O panel into place on the connector on the system board.
- 2 Position the system board and I/O panel assembly over the threaded standoffs inside the chassis.
- 3 Slide the system board and I/O assembly toward the rear of the server until the I/O connectors protrude through the back panel.

- 4 Holding the board with one hand, insert a screw through one of the mounting holes on the board and into a threaded standoff. Do not tighten the screw until every screw has been inserted.
- 5 Insert the remaining screws through the mounting holes and into the threaded standoffs.
- 6 Tighten all the screws firmly in the standoffs.
- 7 Latch the I/O panel or replace the screws to secure the panel to the chassis.
- 8 Connect all internal cables to the system board.
- 9 Install the add-in boards as described in [Procedure 4-11, Add-in board installation, on page 4-22](#).
- 10 Connect all internal cables connected to the add-in boards.
- 11 Replace the side cover as described in [Procedure 4-3, Replacing the side cover, on page 4-11](#).
- 12 Connect all peripheral device cables to the I/O panel.
- 13 Run the SCU utility to configure the system.

Front panel board

The front panel board contains the system controls and indicators. It is mounted to a strap-on standoff and to a threaded standoff inside the chassis.

Removing the front panel board

Before removing the front panel board, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

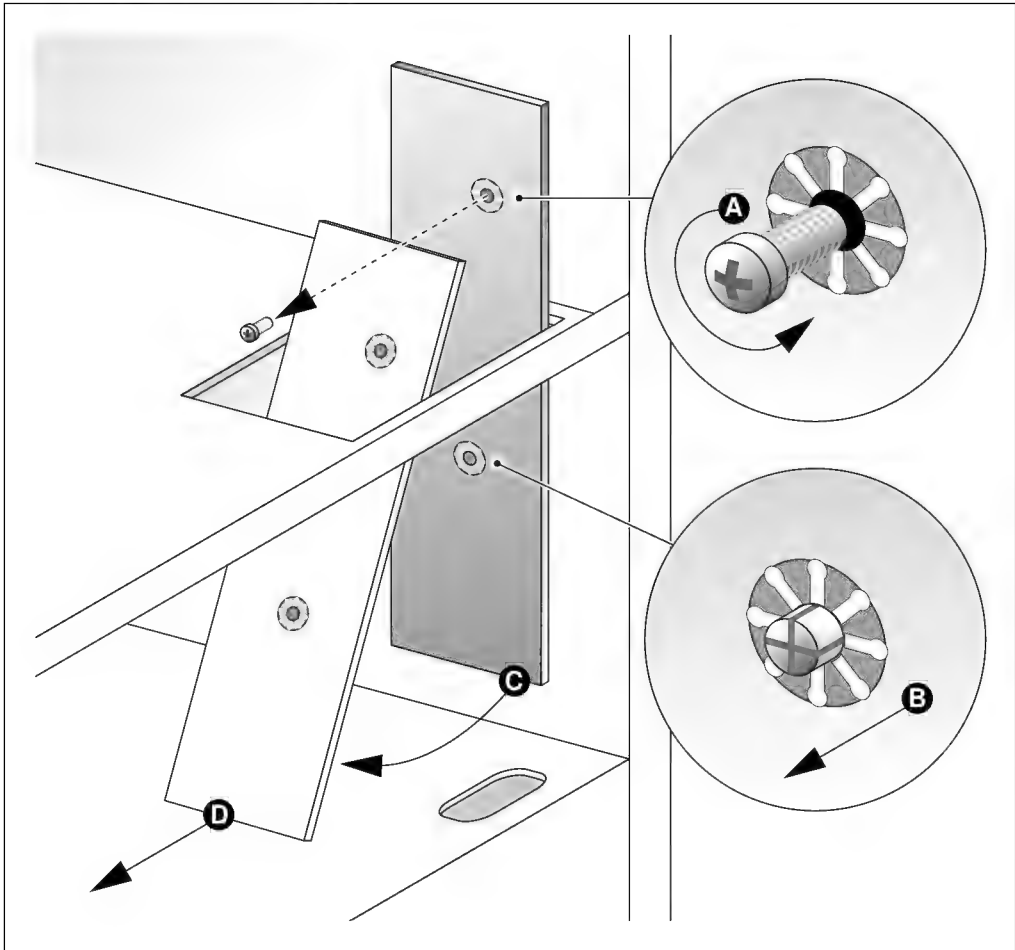
To remove the front panel board, follow the procedure below.

Procedure 4-15

Front panel board removal

- 1 Remove the screw from the threaded standoff as shown in (A) of [Figure 4-18](#).
- 2 Pull the front panel board toward the system fans until it clears the snap-on standoff as shown in (B) of [Figure 4-18](#).

Figure 4-18
Removing front panel board



- 3 Disconnect all cables connected to the front panel board, as marked as (A) through (F) in [Figure 4-19](#).
- 4 Carefully slide the front panel board down toward the hard drive bays until it clears the cutout in the chassis as shown in (C) and (D) of [Figure 4-18](#).
- 5 Remove the board from the server and place it on an antistatic surface.

Replacing the front panel board

Before replacing the front panel board, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

To replace the front panel board, follow the procedure below.

Procedure 4-16

Front panel board replacement

- 1 Place the front panel board in the open area above the hard drive bays.
- 2 Slide the front panel board through the cutout in the chassis.
- 3 Reconnect the cables to the front panel board.
- 4 Position the front panel over the snap-on standoff and the threaded standoff inside the chassis.
- 5 Press the front panel board onto the snap-on standoff until it snaps in place.
- 6 Replace and tighten the screw that secures the front panel board to the chassis.
- 7 Replace the side cover as described in [Procedure 4-3, Replacing the side cover, on page 4-11](#).

Fans

The application processor contains two fans for cooling and airflow:

- Fan 1, for CPUs and SIMMs
- Fan 2, for add-in boards and hard disk drives

Removing Fan 1

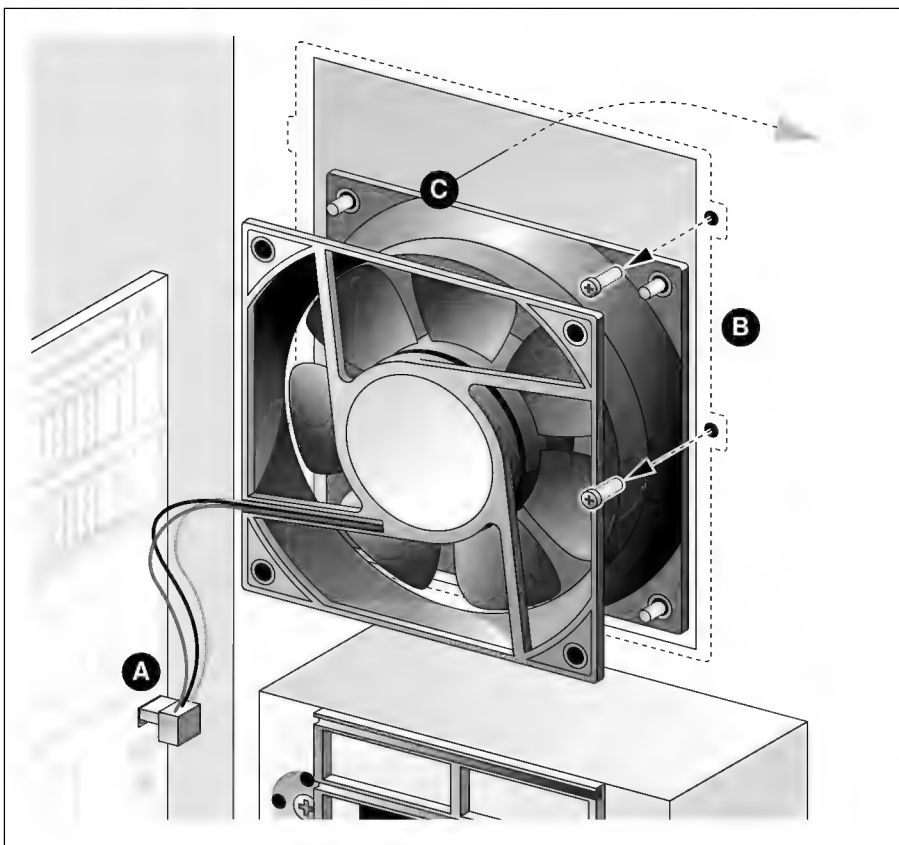
Before removing Fan 1, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

To remove Fan 1, follow the procedure below.

Procedure 4-17**Fan 1 removal**

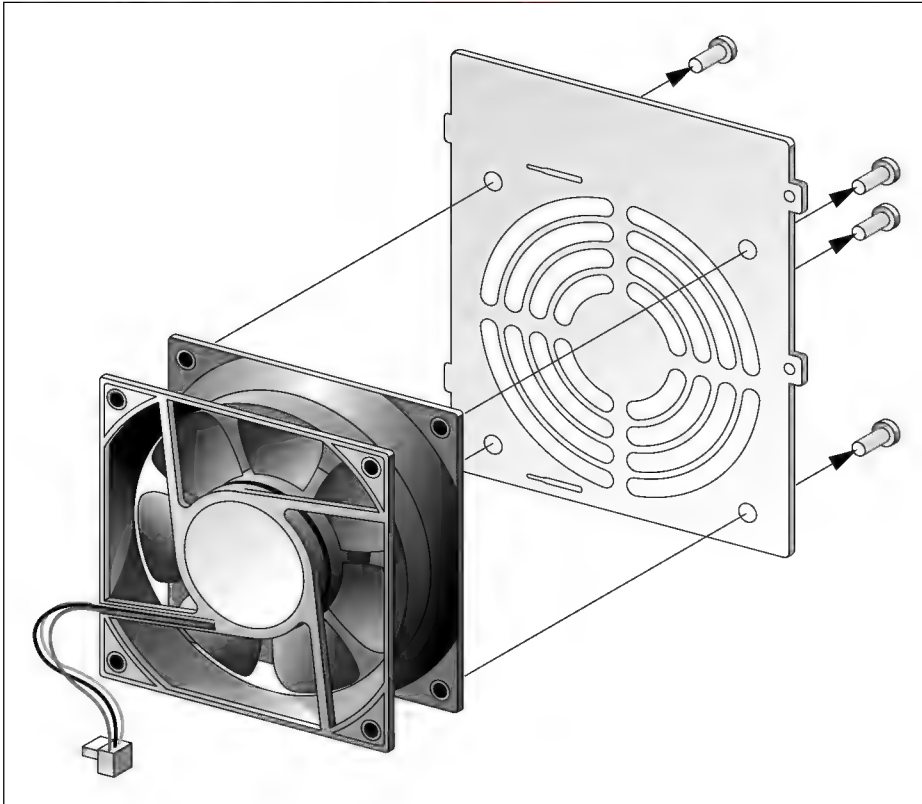
- 1 Disconnect the fan power cable connector from the Fan 1 header on the system board as shown in (A) of **Figure 4-19**.
- 2 Remove the screws that secure the fan assembly to the chassis as shown in (B) of **Figure 4-19**.
- 3 Pull the fan assembly toward you until the tabs on the metal panel clear the slots in the chassis as shown in (C) of **Figure 4-19**.

Figure 4-19
Removing Fan 1



- 4 Slide the fan assembly into the cavity above the hard drive bays and remove it from the system. Place the fan label-side down on a flat surface.
- 5 Remove the four screws attaching the metal panel to the fan as shown in **Figure 4-20**.

Figure 4-20
Removing metal panel from Fan 1



Replacing Fan 1

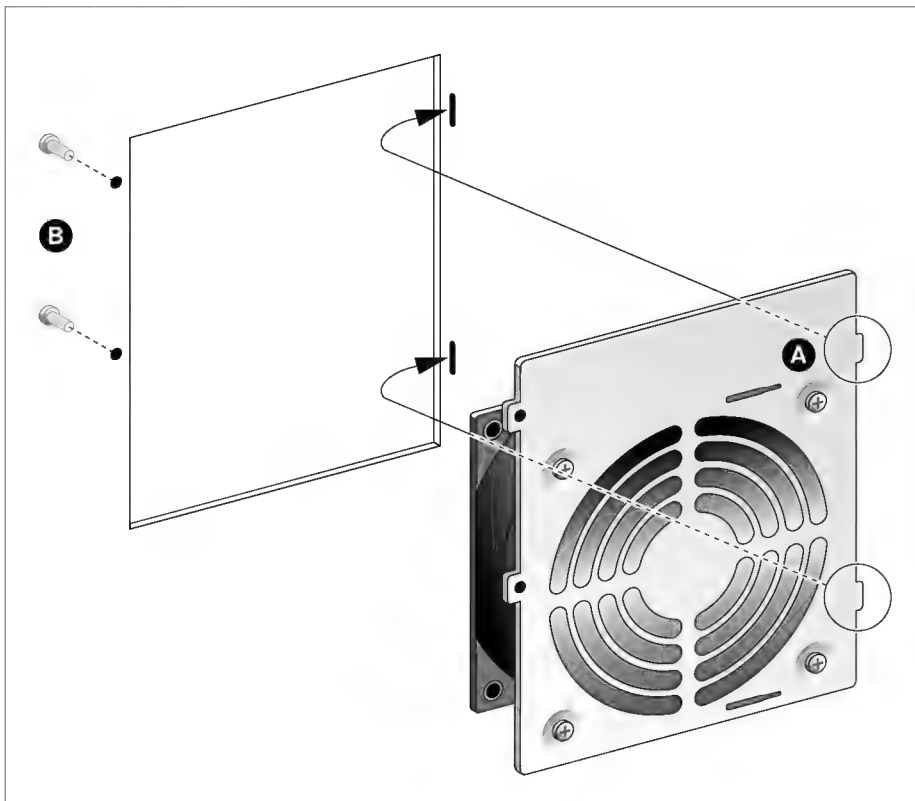
To replace Fan 1, follow the procedure below.

Procedure 4-18

Fan 1 replacement

- 1** Place the fan label-side down on a flat surface.
- 2** Place the metal panel on top of the fan with the concave surface up and the tabs facing the power cable.
- 3** Insert the screws through the holes in the metal panel and into the fan mounting holes. Tighten the screws firmly.
- 4** Slide the fan assembly into the cavity above the hard drive bays. The fan should be facing up and its cable facing toward the inside of the chassis.
- 5** Insert the fan and its power cable side of the assembly through the opening in the inner chassis wall.
- 6** Slide the tabs on the metal panel into the slots in the side of the chassis as shown in (A) in **Figure 4-21**.

Figure 4-21
Fan 1 replacement



- 7 Replace and tighten the screws while holding the fan assembly in place as shown in **Figure 4-21**.
- 8 Connect the fan power cable connector to the Fan 1 header on the system board.
- 9 Replace the side cover.

Removing Fan 2

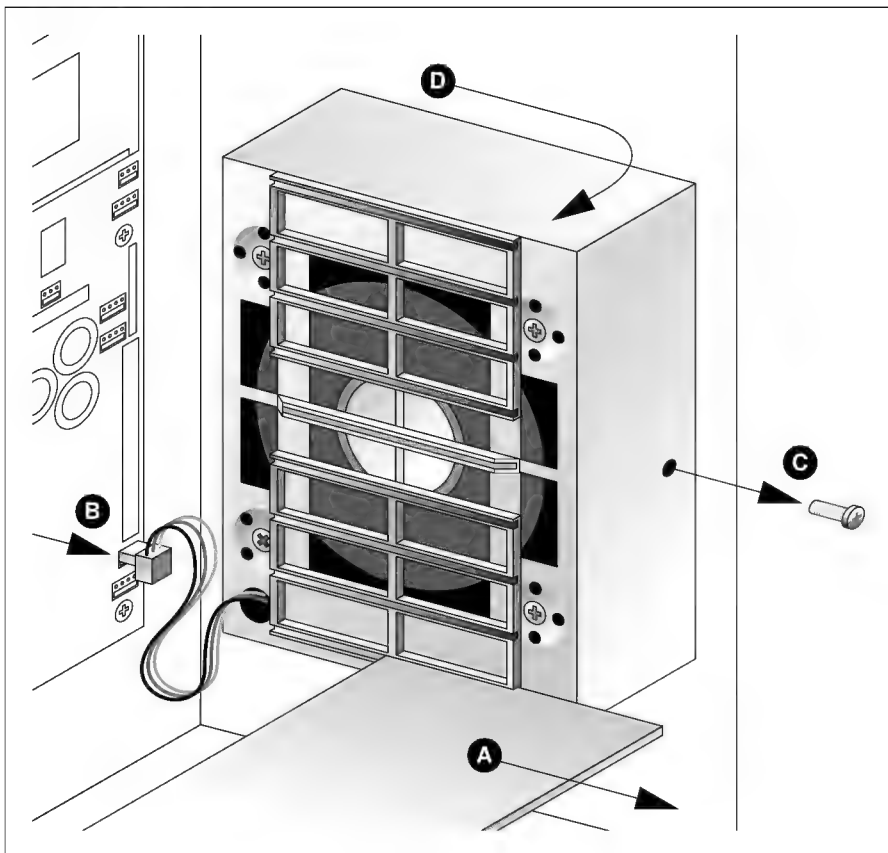
Before removing Fan 2, you must complete **Procedure 4-1, Powering down the application processor, on page 4-5**, and **Procedure 4-2, Removing the side cover, on page 4-7**.

To remove Fan 2, follow the procedure below.

Procedure 4-19**Fan 2 removal**

- 1 Remove any add-in boards engaged in the card guide rails attached to the fan panel assembly as shown in (A) in [Figure 4-22](#). This procedure is fully described in [Procedure 4-12, Add-in board removal, on page 4-26](#).
- 2 Disconnect the fan power cable connector from the Fan 2 header on the System Board as shown in (B) in [Figure 4-22](#).
- 3 Remove the assembly retaining screw as shown in (C) in [Figure 4-22](#).
- 4 Disengage the tabs from the notches in the inner chassis wall by sliding the assembly in the direction shown in (D) in [Figure 4-22](#).

Figure 4-22
Removing Fan 2



- 5 Remove the assembly from the system and place it, with the card guide rails facing up, on a flat surface.
- 6 Remove the four screws that attach the metal panel to the fan.

Replacing Fan 2

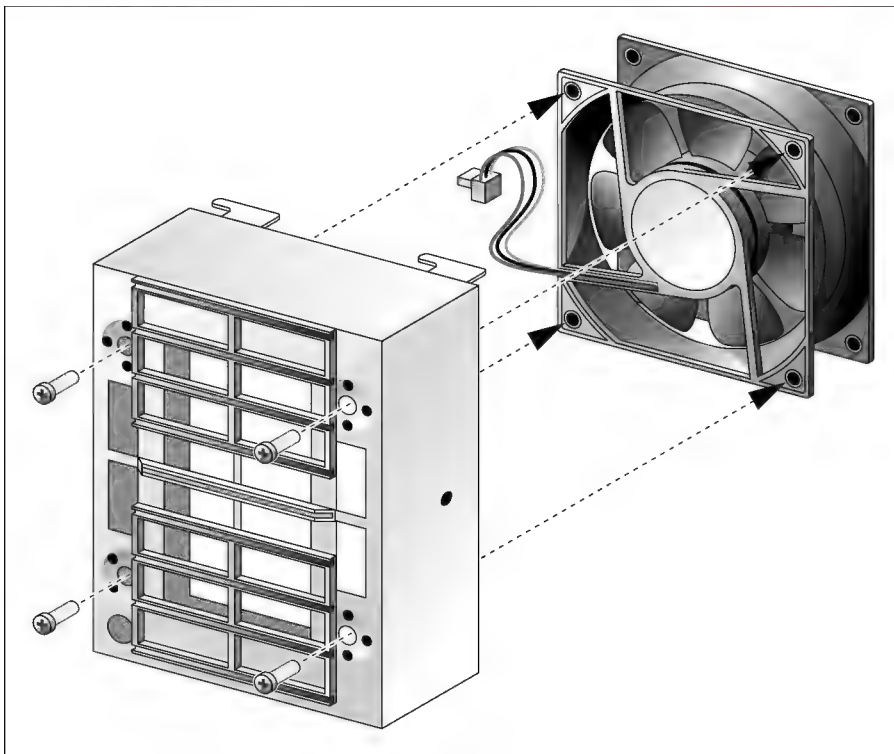
Before replacing Fan 2, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

To replace Fan 2, follow the procedure below.

Procedure 4-20
Fan 2 replacement

- 1 Place the metal fan panel assembly on its side.
- 2 Place the fan inside the assembly with the label side facing the screw holes in the assembly.
- 3 Orient the fan so that the power cable faces the feed-through hole in the assembly.
- 4 Insert the screws through the holes in the metal panel and into the fan mounting holes as shown in [Figure 4-23](#).

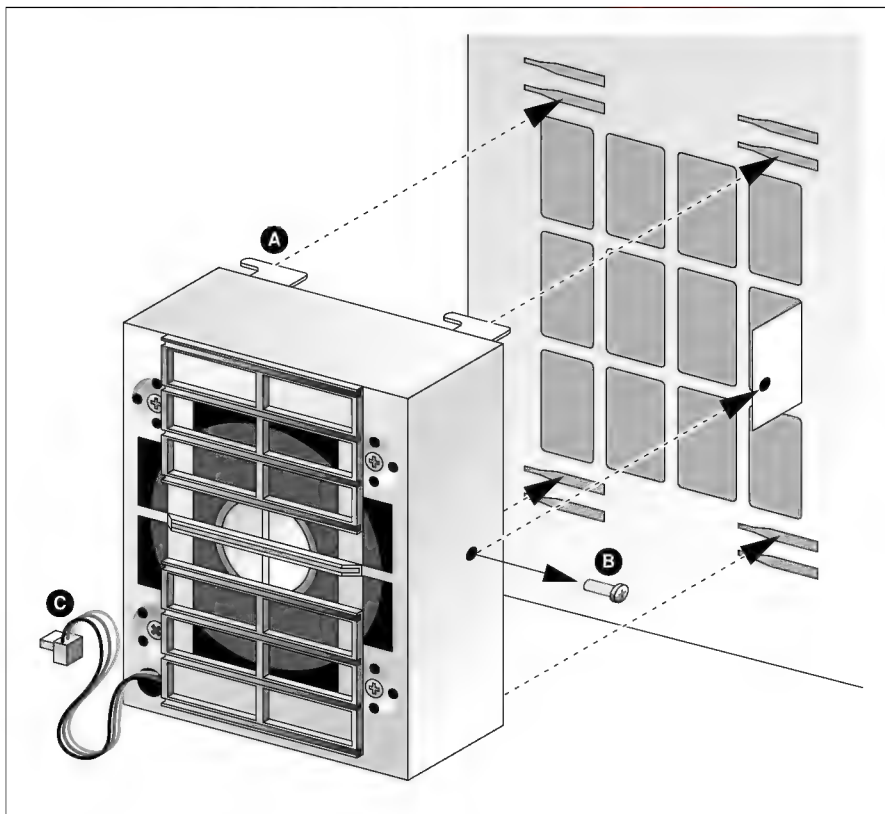
Figure 4-23
Mounting Fan 2 assembly



- 5 Tighten the screws firmly.
- 6 Insert the fan power cable through the feed-through hole in the assembly.

- 7 Position the assembly in the chassis so that the top and bottom row of tabs on the metal panel engage with the notches in the inner chassis wall. Slide the assembly toward the system board until the tabs firmly engage in the notches as shown in (A) in **Figure 4-24**.
- 8 Replace and tighten the assembly retaining screw as shown in (B) of **Figure 4-24**.
- 9 Connect the fan power cable connector to the Fan 2 header on the system board as shown in (C) of **Figure 4-24**.

Figure 4-24
Mounting Fan 2 to chassis



- 10 Replace any add-in boards.
- 11 Replace the side cover.

Hard drive bay assembly

The hard drive bay assembly consists of a SCSI backplane, two drive status light boards, and a metal cage. The assembly is attached to the chassis with seven screws.

Removing the bay assembly

Before removing the assembly, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

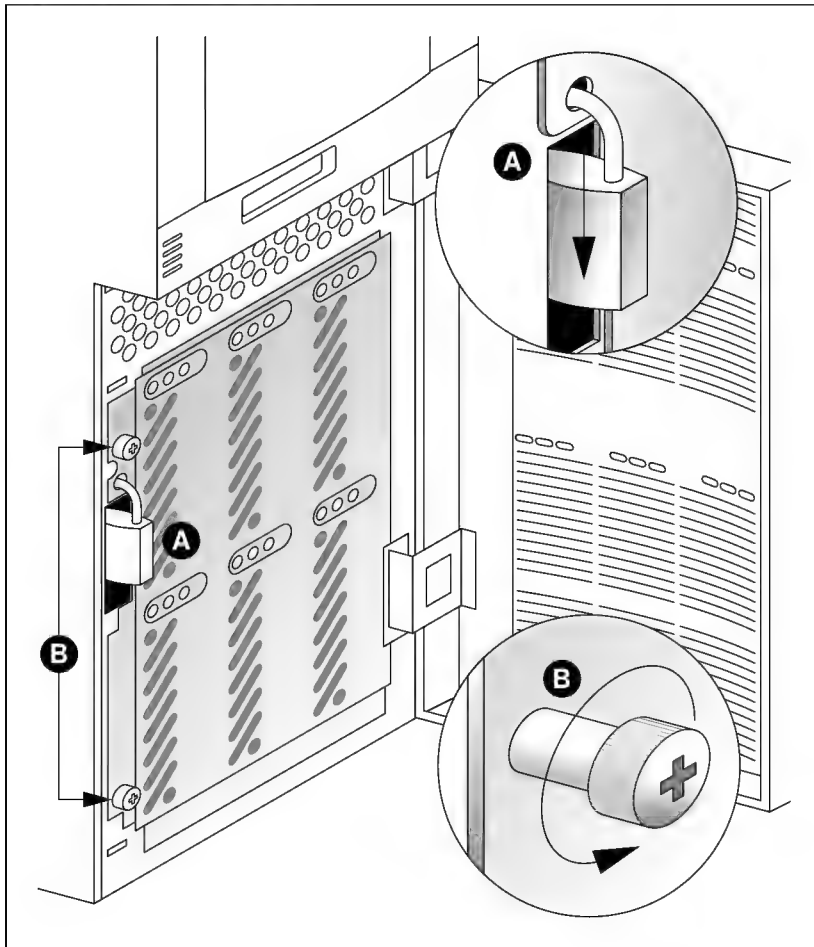
To remove the bay assembly, follow the procedure below.

Procedure 4-21

Hard drive bay assembly removal

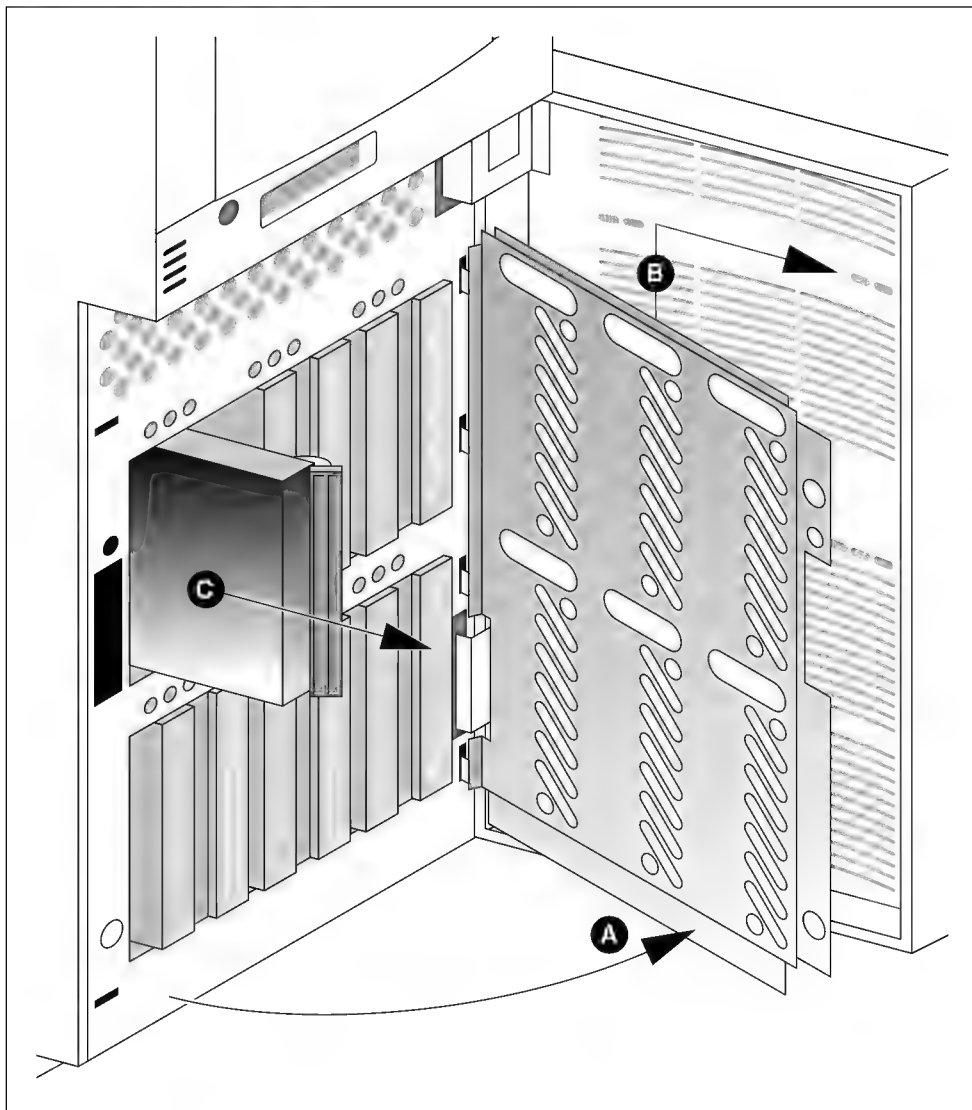
- 1 Open the lower plastic front door of the server.
- 2 Unlock and remove the padlock on the metal door above the hard drive bays as shown in (A) of [Figure 4-25](#).
- 3 Loosen the two spring-loaded thumbscrews securing the metal door to the chassis as shown in (B) of [Figure 4-25](#).

Figure 4-25
Opening metal front door



- 4 Open the door until it is at an angle of about 45 degrees relative to the server as shown in (A) of [Figure 4-26](#). Lift up on the door and pull it toward you to disengage it from the chassis as shown in (B) of [Figure 4-26](#).

Figure 4-26
Removing front metal door



- 5 Reach through the opening above the bays, and disconnect the drive fault cable from J5 on the front panel board.

- 6 Disconnect the wide SCSI cable (if installed) from J16 on the SCSI backplane.
- 7 Disconnect the wide SCSI cables of the add-in SCSI controller board (if installed) from J7 and J16 on the SCSI backplane.
- 8 Disconnect the add-in PCI RAID controller board data port cable (if installed) from J17 on the SCSI backplane.
- 9 Remove the seven screws that secure the bay assembly to the chassis.
- 10 Slide the assembly toward the fans and pull it toward you to disengage it from the slots in the chassis wall.



CAUTION!

Be careful when removing the hard drive bay assembly. The LEDs above the upper and lower bays are easily damaged.

- 11 Pull the assembly out of the chassis.
- 12 Disconnect the power cable from J18 on the SCSI backplane.
- 13 Place the hard drive bay assembly on a static-free surface.

Removing the SCSI backplane

To remove the SCSI backplane, complete the following procedure.

Procedure 4-22

Removing the SCSI backplane

- 1 Disconnect the LED status cables from J2 and J9 on the SCSI backplane. These cables can be accessed through the side openings on the SCSI backplane.
- 2 Remove the nine screws that attach the backplane to the hard drive bay assembly.
- 3 Place the backplane on an antistatic surface.

Replacing the SCSI backplane

To replace the SCSI backplane, complete the following procedure.

Procedure 4-23
Replacing the SCSI backplane

- 1 Connect the LED status cables to J2 and J9 on the SCSI backplane.
- 2 Attach the backplane to the hard drive bay assembly with nine screws.

Replacing the hard drive bay assembly

To replace the hard drive bay assembly, complete the following procedure.

Procedure 4-24
Replacing the hard drive bay assembly

- 1 Place the hard drive bay assembly near the opening between the system fans and the front of the chassis.
- 2 Connect the power cable to J18 on the SCSI backplane.

**CAUTION!**

Be careful when replacing the hard drive bay assembly. The LEDs mounted on the light boards on the upper and lower bays are easily damaged.

- 3 Slide the assembly into the chassis until the tabs on the back of the assembly engage in the chassis wall.
- 4 Slide the assembly toward the front of the system chassis.
- 5 Attach the assembly to the chassis with the seven screws.
- 6 Connect the drive fault cable to J5 on the front panel board.
- 7 Connect the wide SCSI cable from the wide SCSI connector on the I/O panel to J16 on the SCSI backplane, if applicable.
- 8 Connect the wide SCSI cables from channels 0 and 1 of the add-in PCI RAID controller board to J7 and J16 on the SCSI backplane, if applicable.
- 9 Connect the data port cable of the add-in PCI RAID controller board to J17 on the SCSI backplane.
- 10 Position the metal door at a 45-degree angle in front of the hard drive bays.
- 11 Slide the door tabs into the channel slots.

- 12** Close the metal door and secure it to the chassis with the two captive spring-loaded thumbscrews.
- 13** Secure a padlock through the metal door and chassis if desired.
- 14** Close the lower plastic front door of the server.
- 15** Replace the side cover.

Swapping SCSI hard drives

The server includes six 3.5-inch hard drive bays that provide over 12 Gbytes of hard disk drive expansion.

The connectors on the SCSI backplane accept wide/fast SCSI-2 drives with 80-pin SCA connectors.

The server system supports a variety of single-ended SCSI devices.

Mounting a SCSI hard disk drive in a plastic carrier

To mount a SCSI hard disk drive in a plastic carrier, follow the procedure below.

Procedure 4-25

Mounting a SCSI hard disk drive in a plastic carrier

- 1** Remove the 3.5-inch hard disk drive from its protective wrapper, and place it on an antistatic surface.
- 2** Record the model number and serial number of the drive in your equipment log.
- 3** Set jumpers and switches according to the drive manufacturer's specifications, and remove the terminating resistors.
- 4** Orient the drive so that the power and signal connector is at the top edge facing you.
- 5** Place the plastic carrier on top of the drive.
- 6** Attach the carrier to the drive using four screws of appropriate size and length.

Note: Screws are not supplied.

Installing a SCSI hard disk drive in a hard drive bay

To install a SCSI hard disk drive in a bay, follow the procedure below.

Procedure 4-26**Installing a SCSI drive in a hard drive bay**

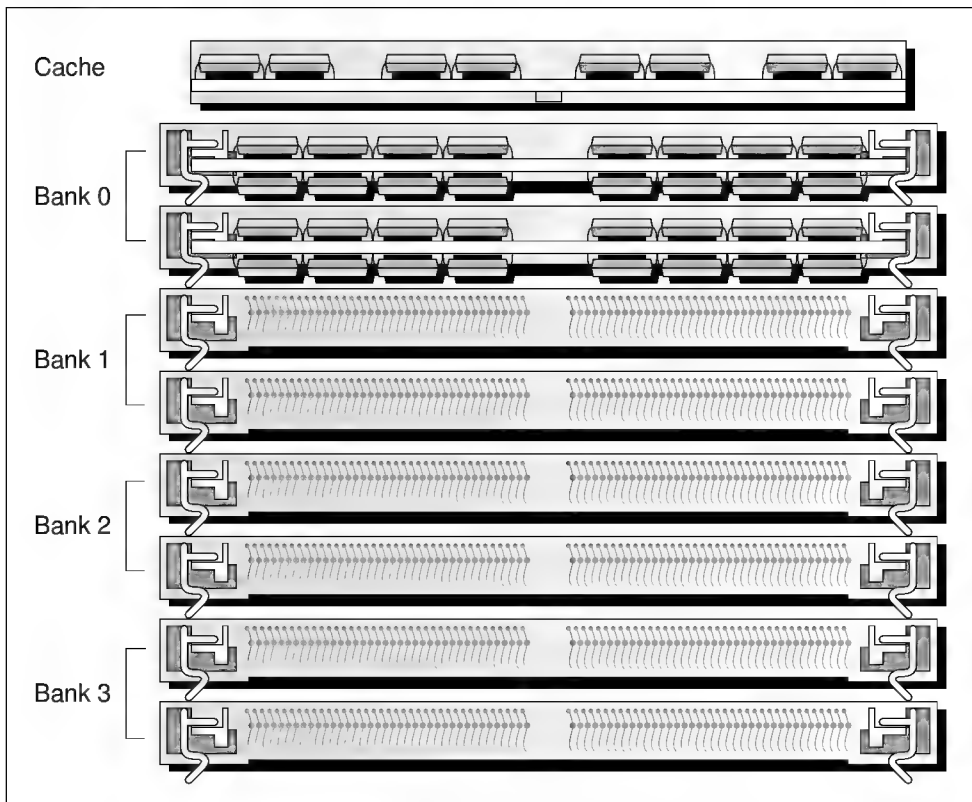
- 1 Open the lower plastic front door of the server.
- 2 Unlock and remove the padlock on the metal door to the hard drive bays if applicable.
- 3 Loosen the two captive thumbscrews securing the metal door to the chassis, and open the door.
- 4 Position the carrier and drive assembly in the hard drive bay guide rails.
- 5 Push the drive into the bay until it docks with the SCSI backplane connector.
- 6 Push the plastic lever on the carrier to the right until it locks around the metal posts on the bay.
- 7 Secure the metal hard drive bay door to the chassis.
- 8 Lock the metal door with a padlock if desired.
- 9 Close the plastic front door of the Application Processor.
- 10 Run the System Configuration Utility (SCU) to verify that the hard disk drive is installed in the system.

Note: If you have installed an external controller board in your server, you may need to set the Hard Disk Drive options to “Not Installed” and the Onboard IDE option to “Disabled” with the SCU. For more information on the SCU, see Appendix C: System configuration utility.

System board SIMMs

The system board contains eight SIMM sockets arranged in four banks as shown in [Figure 4-27](#). The system board supports up to 256 Mbytes with eight 32 Mbyte SIMMs. Starting with bank 0, completely fill each bank.

Figure 4-27
SIMM banks



Contact your sales representative or service technician for a list of approved JEDEC-compatible SIMMs. Use only 36-bit, 72-pin, 70 ns or 60 ns fast page mode SIMMs with tin-lead alloy plated edge connectors for tin lead alloy plated sockets, or with gold-lead alloy plated edge connectors for gold-lead alloy plated gold socket, single or double-sided. Use 256 Kbyte, 1 Mbyte, 4 Mbyte, 16 Mbyte single-sided or 512 Kbyte, 2 Mbyte, 8 Mbyte, 32 Mbyte double-sided SIMMs. You must place identical SIMMs in pairs in each bank.

**CAUTION!****Risk of equipment failure**

Mixing dissimilar metals may cause failures.

Remove a SIMM from its antistatic package by holding the SIMM by its edges only.

Installing system board SIMMs

Before installing system board SIMMs, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

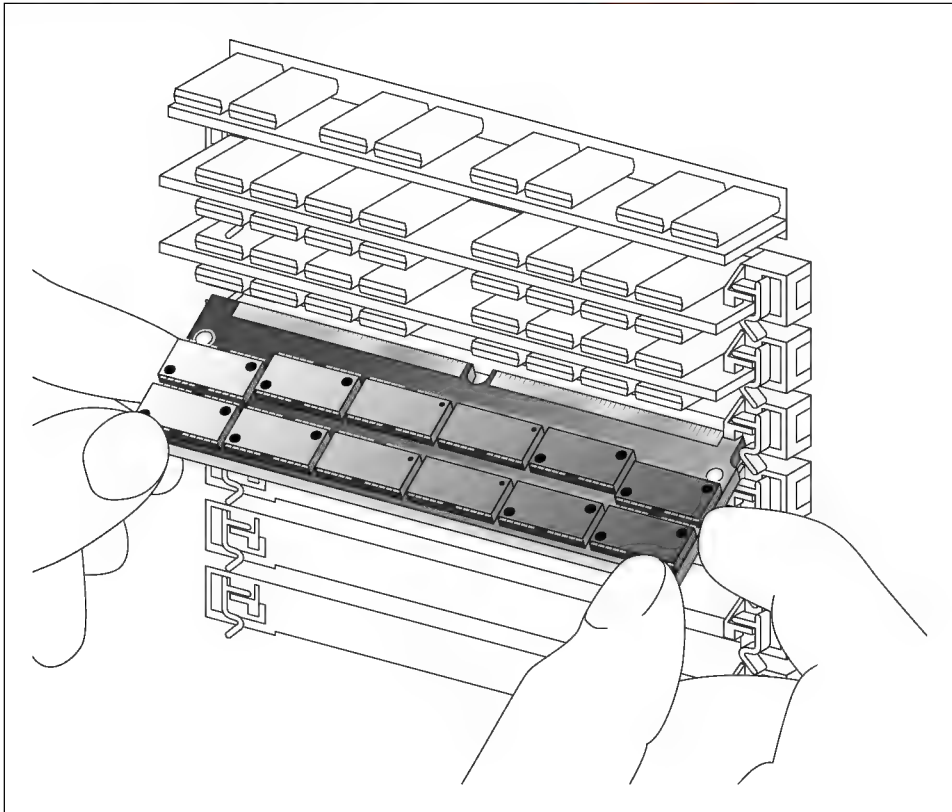
Always record the SIMMs in your equipment log.

Note: To facilitate SIMM installation or removal, position the application processor on its side for the following procedures.

Procedure 4-27
Installing system board SIMMs

- 1 Hold the SIMM at a 45-degree angle, and press it firmly into the bank socket as shown in **Figure 4-28**.

Figure 4-28
Installing system board SIMMs





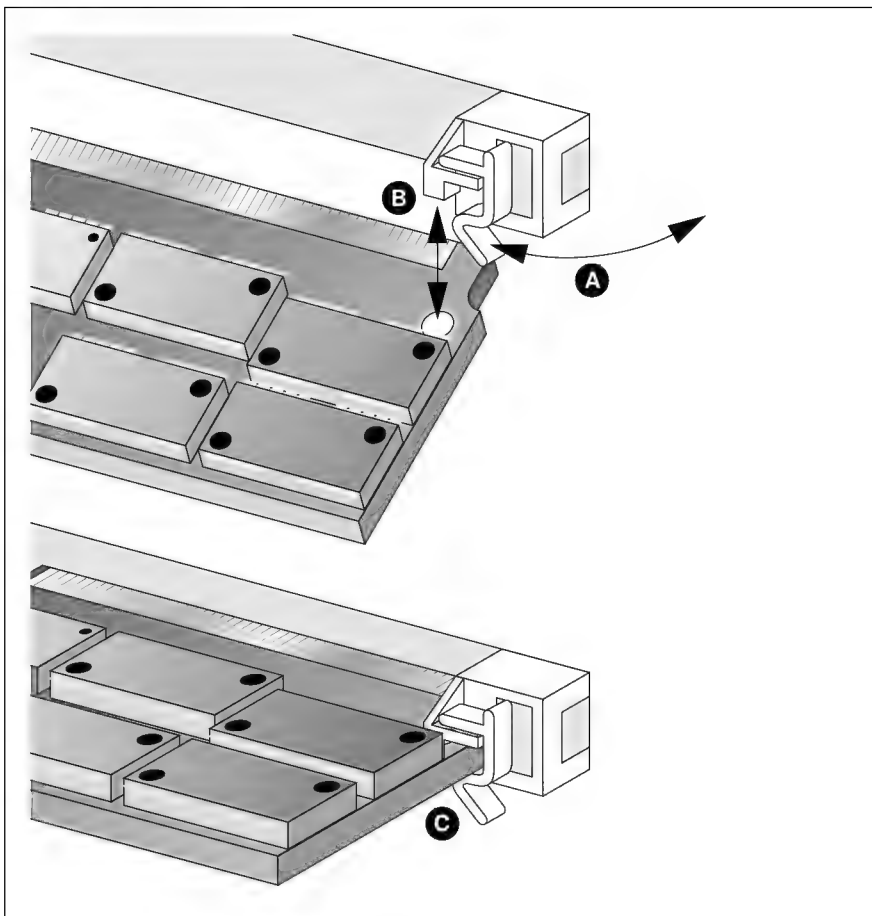
CAUTION!
Risk of equipment damage

Use extreme care when installing a SIMM. Applying too much pressure can break the retaining clips or damage the socket slot. SIMMs are keyed and can be inserted in one way only.

- 2** Push the SIMM vertically until it is held in place by the retaining clips as shown in (A) of **Figure 4-29**.

The small horizontal posts near the retaining clips should pass through the SIMM as shown in (B) of **Figure 4-29**.

Figure 4-29
Positioning SIMMs



The SIMM should be perpendicular to the system board when installed properly as shown in (C) of [Figure 4-29](#). If there is a gap between the SIMM and the retaining clips, open the clips, remove the SIMM, and try again.

- 3** Replace the side cover of the Application Processor.

Removing system board SIMMs

Before removing system board SIMMs, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

Remove system board SIMMs starting with the socket furthest from bank 0.

Procedure 4-28

Removing system board SIMMs

- 1 Open the retaining clips enough to tilt the top edge of the SIMM away from the retaining clips.
- 2 Lift the SIMM away from the socket.
- 3 Store the SIMMs in an antistatic package.
- 4 Replace the side cover of the Application Processor.

Cache memory module

The system board contains a cache memory module connector. Use a 256 Kbyte or 512 Kbyte, asynchronous or burst, cache memory module.

Installing a cache memory module

Before installing a cache memory module, the following procedures must be completed.

Procedure 4-29

Installing a cache memory module

- 1 Align the wide connector section of the module with the wide side of the connector.



CAUTION!

Risk of equipment damage

Hold the module by its edges only.

- 2 Insert the module into the connector.
- 3 Press the module down firmly until it is fully seated in the connector.
- 4 Replace the side cover.

Removing a cache memory module

Before installing a cache memory module, the following procedures must be completed.

Procedure 4-30

Removing a cache memory module

- 1** Rock the module gently from side to side until the edge connectors pull free.
- 2** Remove the module from the slot.
- 3** Store the module in an antistatic package.
- 4** Replace the side cover.

Video memory

The system board comes with 512 Kbytes of onboard video memory.

Increasing the video memory buffer size to 1 Mbyte with a 512 Kbyte (32 Kbyte 16-bit), fast-page mode, 70ns DRAM allows the PCI VGA controller to provide 24-bit color, which displays 16 million colors in video resolutions.

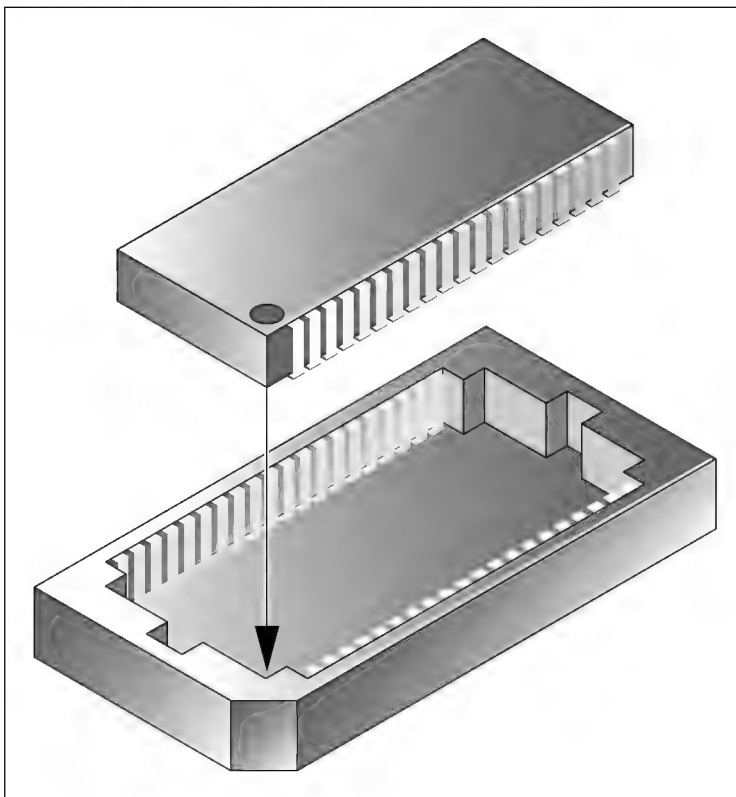
Advanced video modes are automatically enabled. You may need to load drivers to enable setting higher resolution modes in Windows Setup, for example.

Installing the video DRAM chip

Before installing the video DRAM chip, the following procedures must be completed.

Procedure 4-31
Installing the video DRAM chip

- 1 Align the beveled edge on one end of the DRAM chip with the bottom of the socket, as shown in [Figure 4-30](#).

Figure 4-30
Replacing the video DRAM chip

- 2 Press the DRAM chip down firmly until it is fully seated in the socket.

- 3 Replace the side cover.



CAUTION!

Risk of equipment damage

Installing the video DRAM chip incorrectly in the socket could produce an extremely high case temperature, destroying the chip and possibly the system board. Do not touch the chip until the case has cooled.

Removing the video DRAM chip

Before removing the video DRAM chip, the following procedures must be completed.

Procedure 4-32

Removing the video DRAM chip

- 1 Pry up each end of the DRAM chip with a small pointed tool.
- 2 Pull the chip straight out of the socket.
- 3 Place the DRAM chip in an antistatic package.
- 4 Replace the side cover.

Real-time clock chip

You may need to replace the real-time clock chip because of its internal integral lithium battery life span. When the battery starts to weaken, it loses voltage. When the voltage drops below +3 V, system settings stored in CMOS RAM may no longer apply.



DANGER!

Risk of personal injury

The battery may explode if incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer.

Discard used batteries according to the manufacturer's instructions.

Removing the real-time clock chip

Before removing the real-time clock chip, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

Please see [Figure 4-17, System base board and I/O panel components, on page 4-27](#), for the location of the real-time clock chip.

Procedure 4-33

Removing the real-time clock chip

- 1 Remove the real-time clock chip from its socket with an IC-removal tool.
- 2 Dispose of the lithium battery-powered real-time clock chip as required by local ordinance.
- 3 Replace the side cover.



CAUTION!

Risk of equipment damage

Do not expose the component to excessive heat or fire.

Keep batteries away from children.

Installing the real-time clock chip

Before installing the real-time clock chip, the following procedures must be completed.



CAUTION!

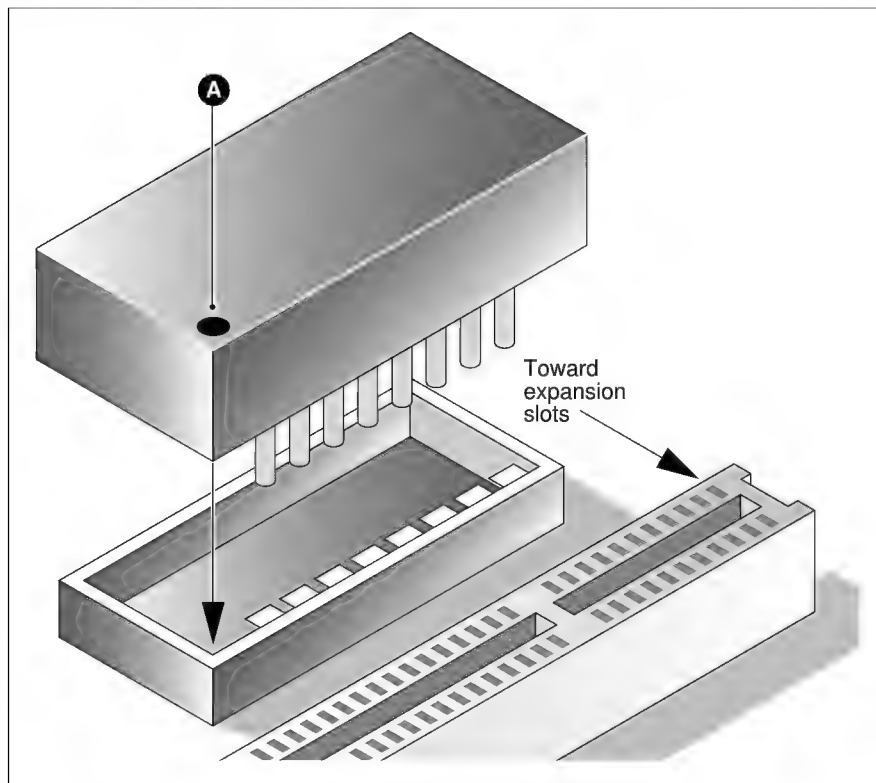
Risk of equipment damage

Do not touch or bend the pins on the real-time clock chip.

Procedure 4-34
Installing the real-time clock chip

- 1 Position the real-time clock chip over the socket so that the dot on the real-time clock is facing the expansion slot as shown in **Figure 4-31**.

Figure 4-31
Replacing real-time clock chip



- 2 Press down on the real-time clock chip until it is firmly seated in the socket.
- 3 Run the CU to restore configuration settings to the real-time clock.
- 4 Replace the side cover.

Recovering and updating the BIOS

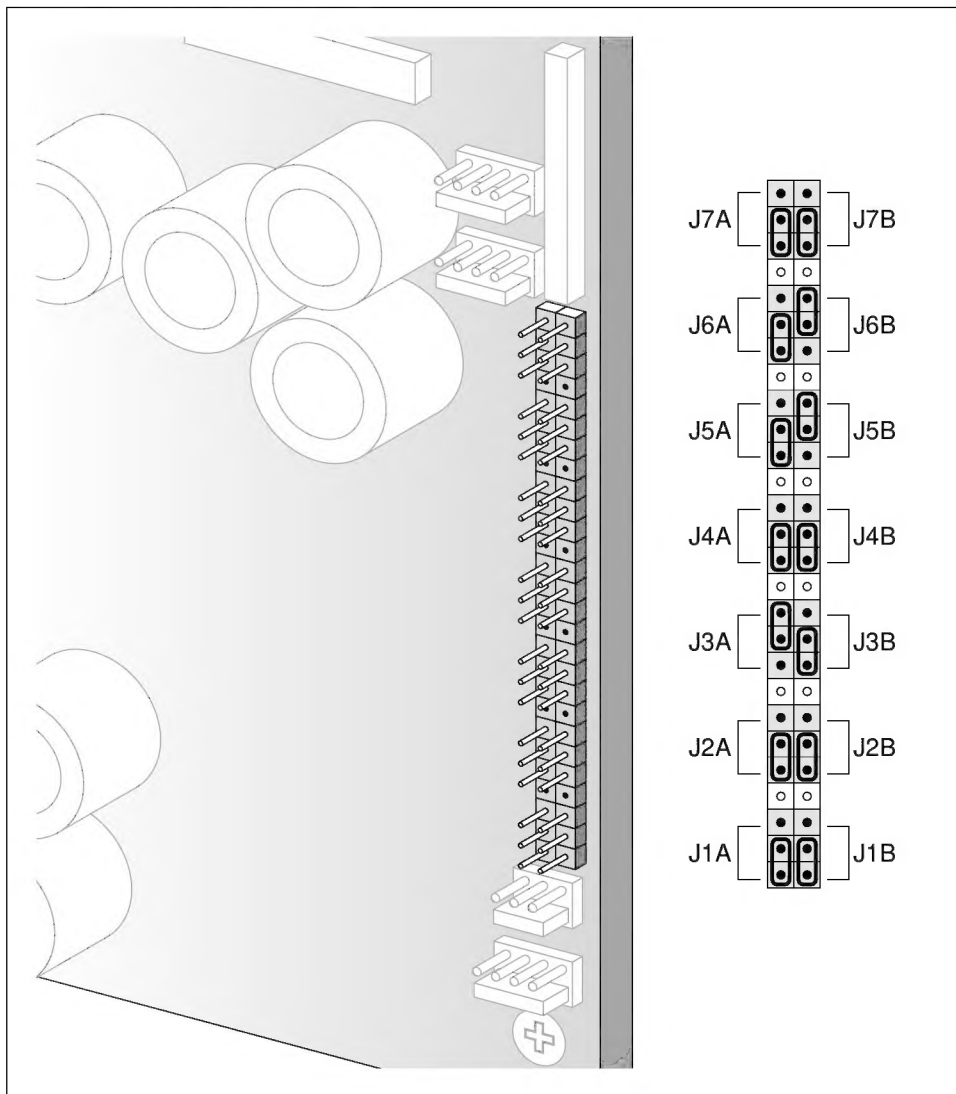
The following section outlines how to recover and update the BIOS settings on your Application Processor.

System board jumpers

The system board configuration jumpers enable you to set specific operating parameters in the Application Processor. Jumper setting defaults are 1-2 for a 90 MHz microprocessor operating at a 60 MHz bus speed.

Figure 4-32 shows the jumper settings on the Meridian IVR application processor.

Figure 4-32
System board jumper settings



Removing or installing a jumper

Before removing or installing jumpers, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).)



CAUTION!

Always turn off and unplug the Application Processor before moving the jumpers.

Do not bend the jumper pins.

Procedure 4-35

Removing or installing a jumper

- 1 Find the appropriate jumper on the jumper block. Use a jumper removal tool or small needle-nose pliers to pull it off the pins.
- 2 Orient the jumper over the two pins for the desired setting, and press it onto the pins.

Recovering the BIOS

Flash memory contains a protected area that cannot be corrupted. Code in this area boots the server from drive A when the BIOS is corrupted. BIOS corruption is generally detected by the POST at system start-up.

The recovery procedure automatically loads flash memory from the BIOS files on the BIOS recovery diskette.

Before initiating the BIOS recovery procedure, the following procedures must be completed.

Procedure 4-36

Recovering the BIOS

- 1 Power down the Application Processor.
- 2 Move the Boot Option jumper to pins 2-3.
- 3 Insert the BIOS recovery diskette in drive A.
- 4 Power up the Application Processor.
- 5 Power down the Application Processor once the recovery process is complete.

- 6 Remove the diskette from drive A.
- 7 Set the Boot Option jumper to pins 1-2.
- 8 Replace the side cover.
- 9 Power up the Application Processor to reboot it.

Updating the BIOS

BIOS updates are available from your distributor technician.

Procedure 4-37

Updating the BIOS

- 1 Unzip the BIOS update file and copy it to a bootable diskette.
- 2 Power down the Application Processor.
- 3 Insert the update diskette in drive A.
- 4 Power up the Application Processor. The update process starts automatically following the system boot. Follow the system prompts.
- 5 Power down the Application Processor after the update process is complete.
- 6 Remove the BIOS update diskette.
- 7 Power up the Application Processor to reboot it.